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Forest Service

Pacific
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Region

February 1993

Threatened, Endangered and Sensitive Plant Program

Summary of FY 92 Accomplishments



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USDA-FOREST SERVICE--PACIFIC SOUTHWEST REGION (CALIFORNIA)
THREATENED, ENDANGERED AND SENSITIVE PLANT PROGRAM
SUMMARY OF FY-92 ACCOMPLISHMENTS

The Region 5 FY-92 budget direction to the Forests stated:

> **"Within funds allocated for threatened, endangered, and sensitive species, strive to increase emphasis on sensitive plant management. Plant activities include developing interim or final sensitive plant management guides, surveys, monitoring, biological evaluations, updating sensitive plant lists, and funding FTE's (full-time personnel) dedicated to the program including the hiring of seasonal botanists where appropriate. Implement cooperative and KV (Knutson-Vandenberg Act) habitat improvement projects for threatened, endangered, and sensitive plants. All Forests are encouraged to develop and implement a cost-share project for sensitive plants. Emphasis should also be given, where appropriate, for federally listed plant species and those candidate 1 species where FWS has an interest or is proceeding with a listing package".**

PROGRAM HIGHLIGHTS

--Hired ***59*** seasonal botanists to do sensitive plant survey work in FY 92.

--A combination of funding sources from cooperators, other resource functions, and appropriated dollars for threatened, endangered, and sensitive plants comprise the R-5 program. During FY 92, the total threatened, endangered, sensitive plant and botany program was **$ *1,606,407***.

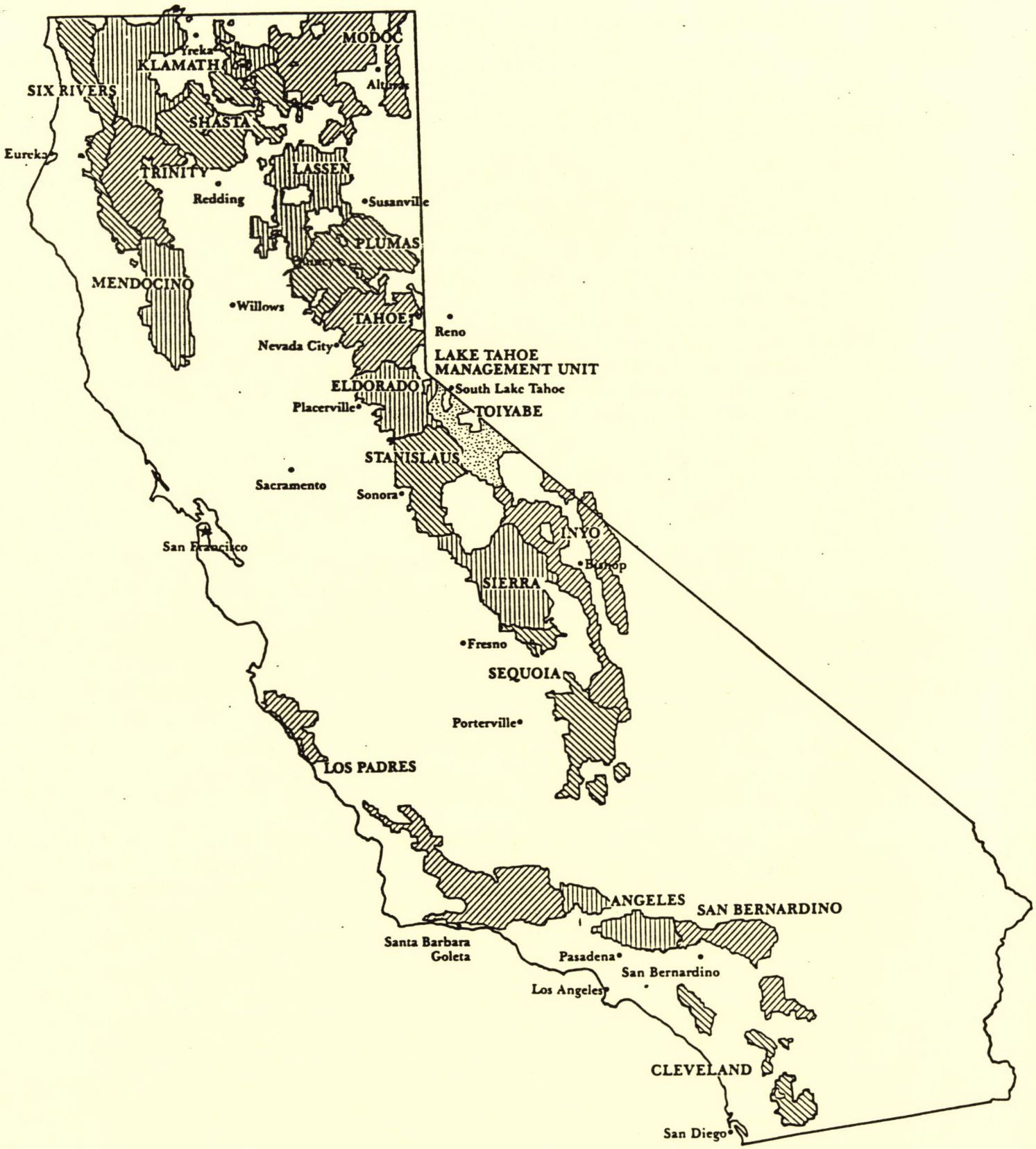
--Increased program visability and advanced sensitive plant conservation with a **22%** increase in funding over FY 91 to do sensitive plant work.

--Survey work on the National Forests yielded ***414*** new occurrences involving **77** of the 302 sensitive plants identified on the R-5 list. All field survey forms are provided to the California Natural Diversity Data Base as outlined in our Memorandum Of Understanding with the Department of Fish & Game.

--Region 5 currently has 7 plant species federally listed under the Endangered Species Act of 1973 (as amended). The limestone endemics package comprising 5 plants was proposed in the Federal Register on November 19, 1991 and is awaiting a final rule. In addition, 22 state endangered and two threatened species are listed under the California Endangered Species Act of 1984, and 28 species are listed as rare under the authority of the California Native Plant Protection Act that occur on National Forest System lands in Region 5.

--Volunteers also added significantly to the development of the sensitive plant program. This included a variety of groups including The Nature Conservancy, several chapters of the California Native Plant Society, Laguna Mountain Volunteer Association, CDFG employees, several professors and graduate students. In addition, ***27*** individuals donated a total of ***3,390*** hours of service to the Regional plant program.

--Continued into our third year of a signed Memorandum of Understanding with the California Field Office of The Nature Conservancy, The Rancho Santa Ana Botanic Garden, and the California Native Plant Society to work cooperatively toward native plant species habitat conservation issues. Completed three challenge cost-share projects with our newest plant partner, The Gardern Club of America which signed a national MOU in FY 92.


MODOC
Yreka
KLAMATH
Alturas
SIX RIVERS
SHASTA
Eureka
TRINITY
LASSEN
Redding
Susanville
PLUMAS
MENDOCINO
Willows
TAHOE
Reno
Nevada City
LAKE TAHOE
MANAGEMENT UNIT
ELDORADO
South Lake Tahoe
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TOIYABE
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Sonora
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SEQUOIA
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SAN BERNARDINO
Santa Barbara
Goleta
Pasadena
San Bernardino
Los Angeles
CLEVELAND
San Diego

USDA-FOREST SERVICE, PACIFIC SOUTHWEST REGION (CALIFORNIA) BOTANICAL PERSONNEL

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Pacific Southwest Region
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Fisheries and Wildlife Mgmt.
630 Sansome Street
San Francisco, CA 94111

Regional Botanist: James R. Shevock: (415)-705-2691
Planning Biologist/Botanist: Anne F. Bradley: (415)-705-2882

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Forest Botanist/Ecologist: VACANT

CLEVELAND NATIONAL FOREST
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Forest Botanist: Kirsten Winter: (619)-673-6180 ext. 3056
Descanso District Botanist: Deveree Volarino: (619)-286-9882

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Ukonom & Happy Camp RD's Zone Botanist: Max Creasy (916)-627-3291

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LASSEN NATIONAL FOREST
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MENDOCINO NATIONAL FOREST
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MODOC NATIONAL FOREST
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Milford District Botanist: Stacy Scott: (916)-253-2223

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San Bernardino, CA. 92408

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Asst. Forest Botanist, Big Bear District: Maile Neel (714)-866-3437

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SHASTA-TRINITY NATIONAL FOREST
2400 Washington Ave.
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SIERRA NATIONAL FOREST
1600 Tollhouse Rd.
Clovis, CA. 93612

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Forest Botanist: Joanna Clines: (209)-487-5155

SIX RIVERS NATIONAL FOREST
1330 Bayshore Way
Eureka, CA. 95501

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Forest Botanist: Lisa Hoover: (707)-442-1721

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Groveland District Botanist: Jennie Haas: (209)-962-7825

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Forest Botanist: Kathy Van Zuuk: (916)-265-4531

ANGELES NF **********

1. Describe the botanical expertise and workforce on your Forest.

Currently, the Forest is without internal botanical expertise. The Forest Ecologist/Botanist position was vacated approximately four months ago when the person filling the position transferred out of Region. The Forest Biologist is serving as Sensitive Plant Coordinator/Program Manager. As in past years, the Forest relies heavily on the botanical expertise of Rancho Santa Ana Botanical Garden to accomplish project level sensitive plant surveys and monitoring.

The Forest Ecologist/Botanist position should be filled sometime in early 1993.

2. Amount and/or types of projects/acres surveyed for and numbers of biological evaluations written for sensitive plants in FY 92.

Under Memorandum of Agreement (MOA) with Rancho Santa Botanical Gardens, sensitive plant surveys were conducted at 40 project locations totaling 1500 acres. In addition, approximately 25 acres were surveyed as part of active monitoring programs for *Castilleja gleasonii*, *Claytonia lanceolata*, *Dudleya densiflora*, *Mahonia nevinii*, *Lilium parryi* and *Optuntia basilaris* var. *brachyclada*.

Internally, 5 project level surveys totaling 10 acres were completed by the Forest Ecologist. Total acres surveyed was 1535.

Two (2) biological evaluations were written for sensitive plants in FY 92.

3. Describe your Forest accomplishments in sensitive plant management in FY 92. (Include such items as species management guide development, challenge cost-share, wildflower week celebrations etc.)

No new species management guides were completed in FY 92. Instead, the Forest had Rancho Santa Ana conduct reviews of those management guides that have been completed (6 total) to determine if "action items" had been completed within specified timeframes. This report is currently being written.

In addition, the RSA completed the following program of work during FY 92:

* Prepared a field guide to Forest sensitive plants.
* Updated Forest sensitive plant atlas.
* Conducted monitoring on *Castilleja gleasonii*, *Claytonia lanceolata*, *Dudleya densiflora*, and *M. nevinii*.
* Initiated monitoring programs for *Lilium parryi* and *Opuntia basilaris* var. *brachyclada*.
* Revaluated Forest sensitive plant list.

Conducted 40 project level inventories in support of other resource areas including timber, fire and recreation.

4. $$ spent on TES plant program during FY 92 by the following funding sources

Appropriated funds (all Forest Service sources & cost-share)	$ *40,800*
Contributed funds & cost-share from non-Forest Service sources	$ *-0-*
Knutson-Vandenberg funds	$ *-0-*
Total Forest Plant Program	$ *40,800*

5. **Name of sensitive plant(s) and number of new occurrences discovered in FY 92**

None

6. **Other Forest plant program highlights.**

None.

CLEVELAND NF **********

1. Describe the botanical expertise and workforce on your forest

Deveree Volgarino continues as Biological Technician (plants) for the Descanso District. Kirsten Winter continues as the Forest Botanist. Considerable botanical expertise and assistance was also provided by Tom White (South Zone Ecologist, S.O.), and Fran Colwell (Resource Assistant/Sensitive Plant Coordinator, Trabuco RD). Tess Higgins worked in the S.O. as Botanical Assistant to the Forest Botanist.

Volunteers contributed many hours. The California Native Plant Society donated over 150 hours of time to help with habitat improvement for sensitive species. The Laguna Mountain Volunteer Association spent about 300 hours working on willow planting and other projects. Milton Gregory contributed over 1800 hours of time assisting the Descanso District with the native plant nursery, seed collection, plant survey, and other projects.

2. Amount and/or types of projects/acres surveyed for and numbers of biological evaluations written for sensitive plants in FY 92

Twenty-five biological evaluations covering approximately 3500 acres were written in FY 92. These included evaluations of land exchanges, grazing allotments, special use permits, habitat improvement projects, recreation developments, prescribed fire, and vegetation treatments.

3. Describe your forest accomplishments in sensitive plant management in FY 92. (Include such items as species management guide development, challenge cost-shares, wildflower week celebrations etc.

A species management guide for Munz's Onion was prepared; a species management guide for Laguna Aster was finalized. An interim management prescription for all other Forest Sensitive plant species (total of 34 spp.) was drafted.

Five cost-share projects were completed in FY 92. The value of challenger contributions to cost-shares totalled $27,500.

The Rancho Santa Ana Botanic Garden participated in a cost-share that involved a detailed botanical study of the San Mateo Wilderness. The Forest Service contributed $20,000 and the Rancho Santa Ana Botanic Garden matched this with $20,000 in contributed time and labor. The Rancho Santa Ana Botanic Garden participated in survey and mapping of Santiago Peak Astragalus (*Astragalus brauntonii*) under another cost-share agreement. Forest Service contributed $2000 and RSA matched this with $2000 of contributed time and labor.

Breck Betts participated in a cost-share involving survey and document preparation on a proposed Botanical Area for the Descanso District. The proposed botanical area, Viejas Mountain, supports populations of four Forest Sensitive plant species and other species of botanical interest. The Forest Service contributed $2000 and Mr. Betts contributed $2000 to this cost-share.

Michael Curto participated in a cost-share agreement developed to learn more about the taxonomic and ecological status of the San Bernardino Bluegrass, a Category 1 candidate for Federal listing. He completed a review of herbarium specimens, did field survey, and prepared a report on this species. The Forest Service contributed $2000 and Mr. Curto contributed $2000 to this cost-share.

A cost-share with the California Native Plant Society involved donated time to build a fence for sensitive plant protection. The Forest Service contributed $1500 in salaries, California State Parks donated $3000 in OHV green sticker funds, and CNPS donated labor valued at $1500. The project involved building 600 feet

of split rail fence to protect the State-endangered Cuyamaca Meadowfoam from driving, parking, and dumping in its habitat.

For Wildflower Week, the Forest Botanist, Kirsten Winter, led a California Native Plant Society trip on the Cleveland National Forest. The field trip emphasized the recently established Organ Valley Natural Research Area, which features Engelmann Oaks and several Forest Sensitive plant species.

4. $$ spent on TES plant program during FY 92 by the following funding sources

Appropriated funds (all Forest Service sources & cost-share)	*$ 35,000*
Contributed funds & cost-share from non-Forest Service sources	*$ 27,500*
Knutson-Vandenberg funds	*$ -0-*
Total Forest Plant Program	*$ 62,500*

5. Name of sensitive plant(s) and number of new occurrences discovered in FY 92

PLANT SPECIES	*# NEW SITES*
Acanthomintha ilicifolia	2
Brodiaea orcuttii	4
Calamagrostis densa	8
Delphinium hesperium ssp. cuyamacae	1
Dudleya viscida	6
Echinocereus engelmannii var. munzii	2
Grindelia hallii	3
Heuchera brevistaminea	2
Horkelia truncata	6
Limnanthes gracilis ssp.parishii	3
Linanthus orcuttii	2
Monardella hypoleuca ssp. lanata	1

40 new sensitive plant locations, representing 12 Forest Sensitive species, were discovered in FY 92.

6. Other Forest plant program highlights

TRABUCO RANGER DISTRICT

Maribeth Gustafson, District Ranger, provided valuable advice and support to the Sensitive Plant Program. Fran Colwell, Resource Assistant, issued collecting permits, kept District files and Atlas current, and maintained botanical contacts for the District.

Fran Colwell implemented closure of Indian Canyon to off-road vehicles to prevent damage to native vegetation. Indian Canyon includes potential habitat for the federally-listed Slender-horned Spineflower. Fran also planned and implemented rehabilitation and closure of an area of Munz's Onion habitat. Munz's Onion is a state-listed species. Fencing and barricades were constructed to prevent off-road vehicle activity in the habitat.

PALOMAR RANGER DISTRICT

Leigh Sevy, Range Conservationist, and John Stephenson, Wildlife Biologist, wrote several biological evaluations for sensitive plants. Leigh Sevy initiated planning of a project to burn Love Valley, a montane meadow. Burning the meadow is expected to increase recruitment of native grasses. Roger Wong, District

Resource Officer, assisted with cone collection and planning outplantings of pinyon pine for a cooperative project with local Native Americans.

DISTRICT BOTANIST, DESCANSO RD

Deveree Volgarino planned and implemented construction of a native plant nursery at Cameron Fire Station. Assumed responsibility for planning and monitoring nursery operations. Grew plants for 2.5 miles of riparian restoration and 2 acres of forest and meadow restoration. Species grown at the nursery include cedars, pines, 5 species of oaks, several native grass species, cottonwoods, and willows.

Coordinated re-construction of a fence to protect Laguna Aster (*Machaeranthera asteroides* var. *lagunensis*) from grazing and recreational activity. Planned and oversaw construction of barriers to prevent off-road vehicle activity in Laguna Aster habitat.

Organized and implemented revegetation projects in Pine Creek and Laguna Meadow, including growing plants for the projects and organizing large groups of volunteers to complete project work. Salvaged sensitive plant species from road improvement projects to be used for outplantings. Organized and oversaw collection of native plant seeds by the Laguna Mountain Volunteer Association. Seed collected will be used in revegetation projects on the district and as stock for the Cleveland National Forest Native Plant Nursery.

Coordinated and oversaw repair and maintenance of a fence built to protect Cuyamaca Meadowfoam from recreational activity and grazing. With Forest Botanist, planned and built a fence to protect Cuyamaca Meadowfoam from off-road vehicle activity. Initiated planning of interpretive signs to educate the public about the meadowfoam and its habitat.

Prepared and presented a program for CNPS focusing on the CNF riparian restoration program. Attended California Native Plant Society Chapter Meetings and field trips. Participated as a member of the ID team for EAs on the Descanso Shooting Area and the King Creek RNA Management Plan.

FOREST BOTANIST

Kirsten Winter, Forest Botanist, and Deveree Volgarino, Descanso District, worked with Resource, Recreation, and Lands staff to develop a priority list for land acquisitions. Parcels were rated based on biological, recreational, and management-related values.

Developed a cost-share with the California Native Plant Society to obtain labor to build a fence to protect Cuyamaca Meadowfoam. Completed all documentation, and with Descanso District Botanist, oversaw and assisted with fence construction. Developed and implemented cost-shares with local botanists and Rancho Santa Ana Botanic Garden to accomplish survey objectives for several Forest Sensitive plant species.

Attended California Native Plant Society board meetings, chapter meetings, and field trips. Served as a board member for the local CNPS chapter.

Wrote two species management guides; developed and presented a plant identification workshop for Forest personnel. Participated as ID team member on several EAs, including 2 land exchanges, two shooting ranges, and a grazing allotment. Updated the biological portion of the EIS for the Civilian Conservation Corps Center.

Tess Higgins, Botanical Assistant, updated the Forest Sensitive plant species Atlas and Database. With the Laguna Mountain Volunteer Association, Tess began developing a sensitive plant T-shirt featuring the Laguna Aster. Tess also assisted with planning for Botanical Areas and provided invaluable assistance with distributing information to districts and providing information to the public.

ELDORADO NF **********

1. Describe the botanical expertise and workforce on your forest

The forest botany program is managed by Mike Foster, the Forest Botanist. Mr. Foster is assisted by one NTE botanist, Patti Lesky. Each district has a sensitive plant coordinator including one forester, Rich Stevens, Amador RD, and three wildlife biologists -- Karen Hayden, Georgetown RD; Don Yasuda, Pacific RD; and Susan Yasuda, Placerville RD. Three of the districts hired temporary botanists in support of their programs: Dan Burmester and Janis Brackett, Amador; Robin Barron and Tamari Sasaki, Pacific; Thea Hangaard plus 5, Placerville. Georgetown RD utilizes Mark Williams as the district botanist (Mr. Williams is classified as a harvest inspector, but works 75% in botany). Don Smith, a charter member of CNPS, is an active volunteer on the Pacific RD; four volunteer surveyors contributed 152 hours of time. Volunteers on Placerville RD contributed 600 hours of time to the district botany program.

2. Amount and/or types of projects/acres surveyed for and numbers of biological evaluations written for sensitive plants in FY 92

Type of Project	*Acres surveyed*	*No. of BE's completed*
26 Green Sales	6,390	20
28 Salvage Sales	6,410	1
4 Herbicide EA's	880	4
Recreation/Facilities/ Misc. (86 projects)	1,490	20
Echo Summit EIS		1
Sensitive Plant Investments	485	0
TOTALS	15,655	46

3. Describe your forest accomplishments in sensitive plant management in FY 92.

A. Species Management Guides. The Forest Botanist and Ms. Lesky began the task of preparing an interim management guide for the Category 1 candidate species *Calochortus clavatus* var. *avius* (CACLA). This entailed:

* Oracle database entry of all 101 known CACLA occurrences for tracking the locations and habitat attributes of CACLA.
* Analysis of data to develop draft habitat capability model.
* Testing of habitat capability model (5 new occurrences were discovered as a result of predictive surveys on 465 acres).
* Establishment of a pilot study to determine protocols for monitoring the demography of CACLA occurrences using the frequency distribution of size classes.
* Continuation and expansion of monitoring program at Boundary Burn in order to track response of the species to prescribed fire (now complicated by the Cleveland Fire which burned through the area at the end of September).

B. Challenge Cost Share Projects

The Station Creek Research Natural Area was surveyed for *Silene invisa* by the Forest Botanist and two volunteers from the California Native Plant Society. An estimated 120 acres were surveyed with negative results.

The demographics of an occurrence of the state-listed Rare, and R5 sensitive plant species, *Senecio layneae*, was monitored at the Traverse Creek Botanical Special Interest Area by volunteers from the Orinda

Garden Club (they documented that the occurrence had a 17 percent increase in its population with a 60 percent increase in the number of plants producing flowers). This challenge cost share with the Garden Club of America also provided for the purchase of 3 weed wrenches and the enhancement of 5 acres of *Senecio layneae* habitat. This enhancement project focused on the removal of the invasive non-native shrub, scotch broom, and was conducted by volunteers from the Eldorado National Forest Interpretive Association (ENFIA).

The Georgetown RD botanist coordinated with ENFIA to accomplish 112 hours of volunteer work (valued @ $5,750) at the Traverse Creek Botanical Special Interest Area. Work completed included: hardened (concrete) stream crossing to access parking area and reduce erosion of stream banks; removal of blackberries and scotch broom from riparian areas to promote herbaceous vegetative recovery of stream banks; construction of check dams and water spreaders to capture silt and promote vegetative recovery; collection, propagation, and replanting of native sedges and rushes along stream edges.

C. Wildflower Week

The Forest Botanist led 1 over-night field trip and 2 one-day field trips to hike and botanize spring floral displays at three separate locations. A total of about 50 people participated on these hikes.

The Placerville RD concentrated on increasing the awareness of district employees by providing cross training in the sensitive plant program, use of native grasses, and conservation of meadows and pacific yew. Over 70 temporary and permanent employees participated in the training. The District Botanist also presented a talk to 40 campers at China Flat C.G. The presentation focused on the sensitive plants of the forest as well as the more common Sierra Nevada wildflowers.

D. Information Management.

The Forest Botanist developed an array of ORACLE data bases to facilitate the storage, retrieval and analysis of sensitive plant data. Data bases were also constructed to maintain data on the flora of the forest including locations, wetland status, and synonyms. Over 1,000 species have been recorded for the Forest.

E. Education/Interpretation

Commencement 2000. This program was developed to expose urban students from Oakland to careers and programs in the Forest Service. A two-hour program on botany and sensitive plant management was given by the Forest Botanist to over 60 high school students and accompanying adults.

Career Shadowing. A student from the Commencement 2000 program was trained on sensitive plant surveys and documentation for two days on the Placerville RD, and a second student from Merrit College "shadowed" the Forest Botanist for one week.

Arbor Day/Placerville RD Open House. Displays were created to introduce visitors to the sensitive plant program, the taxonomy and uses of native herbs and grasses. Tree walks were given at the Institute for Forest Genetics Arboretum emphasizing the role of genetic research in tree improvement.

American Legion. The sensitive plant program and the role of a botanist was presented to over 80 high school students.

Caples Wilderness Resource Walk. Interpretation and management of sensitive plants and native flora was presented by the Placerville RD Botanist to approximately 30 S.O. personnel during a field trip along the Caples Creek Trail.

Cross training of timber, silviculture, fuels, resource, recreation, business management, and archaeology personnel was conducted at the forest and district levels to increase awareness of sensitive plants. As a result of the training, non-botany personnel discovered several new populations of sensitive plants.

Sensitive plant brochures and other types of sensitive plant information were provided for PGE, SMUD, consultants, and private timber companies for their preparation of timber harvest plans and other projects.

An MOU with Michigan-California Lumber Co. was agreed upon and signed by the Forest Supervisor. The MOU addressed concerns about the availability of sensitive species location data and provided a framework for the exchange of species location data.

The Forest Botanist and Forest Wildlife Biologist are working with Georgia-Pacific and Beak Consultants, Inc. to develop a habitat management plan for GP lands. Georgia-Pacific has a substantial land base within and adjacent to the Eldorado NF.

4. $$ spent on TES plant program during FY 92 by the following funding sources:

Appropriated funds (all Forest Service sources and cost-share)	$ *121,315*
Contributed funds & cost-share from non-Forest Service sources	$ *8,500*
Knutson-Vandenberg funds	$ *2,000*
Total Forest Plant Program	$ *131,815*

5. Name of sensitive plant(s) and number of new occurrences discovered in FY 92.

Species	*No. of New Occurrences*	*No. of extensions*
Calochortus clavatus var. *avius*	25	18
Navarretia prolifera ssp. *lutea*	5	0
Phacelia stebbinsii	1	1
Senecio layneae	1	0
Silene invisa	18	18
Totals	50	37

6. Other Forest plant program highlights

Amador Ranger District Highlights

District Botanist established monitoring plots in two timber sales and one herbicide unit.

Georgetown Ranger District Highlights

Dr. Posey continued his botany column in an effort to enlighten and amuse district personnel resulting in an increased awareness of the district's botany resources.

Mark Williams coordinated the completion of an environmental assessment of the Traverse Creek Botanical Special Interest Area (SIA). The EA addressed the effects of implementing watershed restoration and sensitive plant enhancement projects on the environment. The EA also provided a framework for implementing an interpretive program at the SIA.

Pacific Ranger District Highlights

Plant communities described: One subalpine vernal pool; Four Quaking Bogs with *Drosera rotundifolia*.

Other plant discoveries: New location for *Carex limosa*; 3 new locations for *Viola tomentosa* (a forest Special Interest Plant).

Plant Species Checklists were developed for the Red Fir Zone, for both riparian areas and uplands. A Pacific RD flora is being developed. Plant lists for all areas visited have been compiled and are available at the District Office. Plant lists for 12 Archaeological Sites have been made for the District Archeologist.

The district botanists visited and monitored the *Draba asterophora* var. *macrocarpa* at Saucer Lake in Desolation Wilderness. They were accompanied by two volunteers.

The District Botanist is coordinating with the Landscape Architect to incorporate two sensitive plant species into the new office landscaping (plant materials to be used were recovered from sites just prior to road construction).

Placerville Ranger District Highlights

Native Grasses. The District Botanist received training in the use of native grasses and has begun to implement a program wherein all revegetation projects are coordinated with botany, including the use of grass seed and mulch on timber sale contracts. Two areas have been planted with native grasses; an upper elevation area in Middle Creek was planted to re-establish vegetation in a burned area to control erosion, and a low elevation meadow was treated to replace exotic grasses and to provide forage for wintering deer.

Pacific Yew. The District Botanist in coordination with the District Wildlife Biologist and timber management are part of a Pacific Yew committee to determine how we will manage this species. The botanist attended the Pacific Yew conference in Corvallis and shared her information through the botany and biology networks. Pacific Yew is being addressed in timber sales and is being informally inventoried and tracked through the resource shop.

Ozone. The District Botanist received training and was part of the Ozone Injury Identification Team. Information was collected from ponderosa pines to determine the presence and extent of ozone injury. This is an ongoing study that started last year and will continue eventually providing the data to the Air Quality Control Board.

Special Interest Plants. Known occurrences were relocated to assess their condition and locations recorded into sensitive plant maps and records.

Aspen. Stands of aspens were informally inventoried and tracked to assess the size and vigor of the stands. The information will be used to help monitor forest health.

Neotropical Birds. A temporary botanist (Julie Jensen) was assigned to a team of surveyors to describe the vegetative characteristics and species composition of point count sites.

Two college interns compiled floras of the Jenkinson Lake, Horsetail Falls, Lovers Leap and Caples Creek areas for use as part of the R5 Eyes on Watchable Wildlife program. El Dorado Irrigation District (EID) was a partner in the Jenkinson Lake inventory.

Continued meadow inventory work and incorporated last years results into Sale Area Improvement Plans.

Supervisors Office Highlights

The Forest Botanist prepared two province-wide biological evaluations that provided a framework for analyzing the effects of salvage logging on sensitive plant species in Region 5.

Biological Evaluations (BE) written by the Forest Botanist were included in the appendices of a WO task force report on problems encountered in expediting the salvage of dead and dying conifers. The BE's were provided as examples of quality input. BE's were also provided to Region 4 for use in regional training sessions.

The Forest Botanist was selected for a 59 days detail as Forest Wildlife Biologist on the Eldorado National Forest.

The Forest Botanist wrote an article that was featured in the Eldorado National Forest Interpretive Association newsletter.

The Forest Botanist serves as the Forest Riparian Coordinator. In that role, Mr. Foster submitted two proposals to the Riparian Initiative and provided technical and professional expertise to forest and district riparian improvement projects.

INYO NF **********

1. Describe the botanical expertise and workforce on your forest

The Inyo National Forest had one GS-9 (40%) Botanist. This individual was on detail to another forest from 5/1/92 through 9/1/92. Each district (4) have a wildlife biologist (3) or Bio-Tech (1) who are responsible for the wildlife program on their district. In early May, the Bio-Tech on white Mtn. RD transferred to Region 2 leaving the forest short handed by two people during the height of the field season. Each district employed a seasonal Bio-Tech who had some responsibilities for sensitive plant work. In addition, the forest had 10 volunteers who spent 112 hours doing survey work.

2. Amount and/or types of projects/acres surveyed for and numbers of biological evaluations written for sensitive plants in FY 92

Thirteen Biological Evaluations were completed for varying size projects.

Plant surveys was accomplished on 1935 acres. Of this total, 400 acres were for *Astralagus monoensis*, 600 acres for *Cryptantha roosiorum*, 380 acres for *Horkelia hispidula*, 40 acres for *Pedicularis crenulata* and 515 acres for *Oxytropis deflexa* var. *sericea*.

Plant monitoring was accomplished on 370 acres. Of this total, 200 acres were for *Astragalus mononesis*, 40 acres for *Abronia alpina*, 15 acres for *Hackelia brevicula*, 15 acres for *Oxytropis deflexa* var. *sericea*, and 100 acres for *Sclerocactus polyancistrus*.

Twelve structures were maintained which protect 9 acres of plant habitat.

3. Describe your forest accomplishments in sensitive plant management in FY 92. (Include such items as species management guide development, challenge cost-shares, wildflower week celebrations etc.

Since the Forest Botanist was detailed to another forest and the primary Bio-Tech was transferred, there were no Species Management Guides or Interim Management guides written for the Inyo NF during FY 92.

The Inyo NF entered into two cost-share agreements with the Nevada Natural Heritage Program. The first involved setting up a mechanism for receiving annual reports for the R5 lands within the state of Nevada. This will be similar to the reports received from the California Natural Diversity Data Base and will be contracted for on a two year basis. The second agreement covered the gathering of field data and writing of status reports for *Arabis pinzliae* and *Phacelia monoensis*. In addition, the NNHP will provide occurrence information for *Streptanthus oliganthus* and *Draba subumbellatum* as encountered during their field work. The final reports for this last project are due on 12/31/93.

4. $$ spent on TES plant program during FY 92 by the following funding sources

Appropriated funds (all Forest Service sources & cost-share) $ *42,276*
ML $5,400, MM $6,500, WM $2,000, MW $7,000, SO $21,376

Contributed funds & cost-share from non-Forest Service sources	$ *4,063*
Knutson-Vandenberg funds	$ *3,500*
Total Forest Plant Program	$ *49,839*

NOTE: $2,000 was contributed to the construction of new barracks in Bishop to guarantee a spot for one seasonal botanist/bio-tech. Housing has been a real problem in obtaining seasonal help in the supervisor's office.

5. Name of sensitive plant(s) and number of new occurrences discovered in FY 92

NAME	*# NEW OCCURRENCES*
Eriogonum ampullaceum	1
Erigeron multiceps (reported by Sequoia NF)	1
Horkelia hispidula	1
Hackelia brevicula	2
Oxytropis deflexa var *sericea*	4

6. Other Forest plant program highlights

The Forest Botanist evaluated all of the plant species on the Forest's three lists and made recommendations for additions and deletions from each (sensitive list, watch list I, and watch list II). The recommended Sensitive Plant List will include 33 species (this includes 2 newly found species), up from 25, and the Watch List will have 17 species, down from 35. This has resulted in reducing the total number of species needing to be considered during the preparation of CE's, EA's, and BE's. The evaluation process and recommendations were reviewed by Mary DeDecker, who concurred with the Forest Botanist, and all changes documented for future reference. These changes were presented to the Forest Management Team and Forest Supervisor who supported them.

The Forest Botanist has updated 50% of the sensitive and watch list plant folders.

A purchase order was issued to a local botanist for the complete revision of the Forest Herbarium, mounting of specimens, and identification of stored specimens.

The Forest Botanist has contracted to have a local botanist gather drawings, photos, and habitat descriptions to complete a forest sensitive plant field guide. This work will provide us the necessary materials to print sufficient copies for the field crews, district staff, and biologists in the Supervisor's Office.

Our Civil Rights Officer (a Wildlife Biologist) surveyed the Kern Plateau area for sensitive plant populations potentially affected by the recommendations presented in the Forest OHV Plan.

KLAMATH NF **********

1. **Describe the botanical expertise and workforce on your Forest.**

Forest Botanist GS-11 permanent/full time Supervisor's Office
Asst Forest Botanist GS-9 permanent/ 3/4 time Supervisor's Office
Zone Botanist GS-9 permanent/half time Scott/Salmon Districts
Ecologist GS-9 permanent full time Ukonom District
District Botanist GS-5 temporary/half time Goosenest District
Forestry technician GS-5 field survey trainee Happy Camp District
Archaeology tech. GS-5 field survey trainee Happy Camp District

2. **Amount and/or types of projects/acres surveyed for and numbers of biological evaluations written for sensitive plants in FY 92.**

Projects evaluated and/or surveyed for sensitive plants:

15 green timber sales
14 bug kill salvage sales
2 fire salvage sales
2 blowdown salvage sales
3 precommercial thin sales
3 land exchanges
1 National Grassland inventory
1 facilities expansion project
1 private TS cooperative survey

Total acres evaluated for potential sensitive habitat:	85,693
Total acres surveyed for sensitive plant species:	14,920
Number Biological Evaluations written for sensitive plants:	37

3. **Describe your forest accomplishments in sensitive plant management in FY 92. (Include such items as species management guide development, challenge cost-shares, wildflower week celebrations etc.**

Continued data collection for *Silene marmorensis* management guide.
Coordination with private land owner for survey and management of habitat for endemic species *Calochortus persistens*.
Forest planning analysis, and development of standards/guidelines for sensitive plants for Forest Plan.
Coordination with adjacent Region 6 (Oregon) national forests on joint management of sensitive species.

4. **$$ spent on TES plant program during FY 92 by the following funding sources**

Appropriated funds (all Forest Service sources & cost-share)	$ *56,760*
Contributed funds & cost-share from non-Forest Service sources	$ *-0-*
Knutson-Vandenberg funds	$ *-0-*
Timber receipts funds	$ *16,000*
$$ spent on other elements of the botany program (see #6):	
Appropriated funds (all Forest Service sources)	$ *45,500*
Total Forest Plant Program	*$118,260*

5. **Name of sensitive plant(s) and number of new occurrences discovered in FY 92.**

Silene marmorensis	1
Calochortus persistens	3
Perideridia leptocarpa	1

Species for which range and/or existing populations were extended:

Trillium ovatum ssp. *oettingeri*	3
Phacelia greenei	1
Ivesia pickeringii	1

6. Other Forest plant program highlights.

Zone Botanist:

*Retyped timber strata on 16,000 acres for planning area base data layer.
*Presented paper at Symposium of Biodiversity of NW Calif; "Sensitive Plant Management on the Klamath NF".
*Nature hike leader, Kidder Creek Outdoor School.
*Useful and edible plants demonstration, Girl Scouts of America.
*Coordinator of Audobon Society "Fire Ecology of the Klamath Region" program.
*Serves as Forest Recycling Program manager.

Asst Forest Botanist:

*Coordination of Sensitive plant program and resource support to districts.
*Continuation of lichen monitoring for air quality program, including coordination with USFS research re future vascular plant monitoring.

District Botanist:

*Continuation of Mt Ashland seed collection and erosion revegetation project using endemic lupine species.
*Botanical inventory of Butte Valley National Grassland restoration project.

Forest Botanist:

*Analysis of potential effects of forest management and development of management standards and guidelines for Forest Plan as relates to biological diversity, Research Natural Areas, and Botanical Special Interest Areas.
*Presented paper and poster at Symposium of Biodiversity of NW Calif; "Biodiversity Analysis for Land Management Planning on the Klamath NF".
*Presented paper at Kisatchie National Forest (Lousiana) Ecosystem Conference; "An Ecological Approach to Management on the Klamath NF".
*Taught a segment of Wildlife Habitat Management continuing education shortcourse, Utah State Univ; "Linking Ecosystem Management and Biodiversity Needs to Forest Plans".
*Represented Forest and botany program at Siskiyou Golden Fair and Heritage Days.
*Member KNF Emergency Fire Rehabilitation team.

LASSEN NF **********

1. Describe the botanical expertise and workforce on your forest

Botany personnel on the Lassen National Forest for FY 92 are the Forest Botanist (Beth Corbin), one botany seasonal (Kim Earll), and three sensitive plant coordinators with collateral duties (Chuck Rowe, Dan Merritt, and Wayne Bienkowski).

2. Amount and/or types of projects/acres surveyed for and numbers of biological evaluations written for sensitive plants in FY 92

42 different projects were surveyed in the 1992 field season, ranging from a two acre waterhole development to a 51,000 acre management area timber sale. These projects include eight salvage sales, eight biomass thinning projects, twelve green timber sales, eight water development projects, four brushfield wildlife projects, one land exchange, and one diatomaceous earth mine. Sensitive plants were found in or adjacent to nine of these projects. Environmental analysis information (including biological evaluations) has been or will be supplied to the project planners. Input was also provided for several other projects without new field surveys being done, based on previous surveys or existing habitat information. In addition, Forest information was provided for the Regional Sierra Province Salvage Biological Evaluation.

The following types of projects and corresponding acres were surveyed for sensitive plants in FY 92. Salvage sales for 17,250 acres; thinning/biomass sales for 14,025 acres; green timber sales for 141,400 acres; water developments for 174 acres; and misc. projects for 1,040 acres. Grand total of 173,889 acres.

3. Describe your forest accomplishments in sensitive plant management in FY 92. (Include such items as species management guide development, challenge cost-shares, wildflower week celebrations etc.)

A species management guide for *Mimulus pygmaeus*, Egg Lake monkeyflower, was signed in December 1991.

An article about the sensitive plant *Scheuchzeria palustris* var. *americana*, American scheuchzeria, was published in the Lassen Forest newsletter, the Lava Flow.

The proposed Timbered Crater Research Natural Area, which contains the sensitive plants *Orcuttia tenuis*, slender Orcutt grass, *Eryngium mathiasiae*, Mathias' coyote thistle, and *Mimulus pygameus*, Egg Lake monkeyflower, was fenced using California Environmental License Plate (CELP) funds. A categorical exclusion for environmental analysis was written for the fencing project.

Wildflower Week activities were accomplished as a coordinated venture between Lassen National Forest and Susanville District of the Bureau of Land Management botanists. A lobby display was done, including wildflower photographs, herbarium mounts, fresh flowers in jars, and a "mystery" shrub to key out (for a prize). Smaller versions of the display were made for the Almanor and Hat Creek District offices. A lunchtime slide show was presented. Handouts were developed and printed of "Wildflower Hotspots" for the Lassen National Forest, which included a small map, directions, brief descriptions of some of the more prominent wildflowers, and other interesting things to do in the area.

4. $$ spent on TES plant program during FY 92 by the following funding sources

Appropriated funds (all Forest Service sources & cost-share)	SO	*$35,300*
	Eagle Lake	$ 1,000
	Almanor	$ 1,000
	Hat Creek	$ 1,000

Contributed funds & cost-share from non-Forest Service sources	*$ 6,035*
Knutson-Vandenberg funds	*$ 0*
Total Forest Plant Program	*$44,335*

5. Name of sensitive plant(s) and number of new occurrences discovered in FY 92

Eryngium mathiasiae	2
Mimulus pygameus	3
Trillium ovatum ssp. *oettingeri*	4
Orcuttia tenuis	3

6. Other Forest plant program highlights

The following known sensitive plant occurrences were monitored in FY 92:

Asplenium septentrionale	1 occurrence
Calochortus longebarbatus	1
Eryngium mathiasiae	7
Gratiola heterosepala	5
Mimulus pygmaeus	13
Orcuttia tenuis	4
Scheuchzeria palustris var. *americana*	1
Senecio eurycephalus var. *lewisrosei*	1
Silene invisa	3

The Forest Botanist continues to coordinate with other resource to increase the use of locally collected native plant species for revegetation. Meetings were held and we corresponded with the California Correctional Center in Susanville, which is developing native plant propagation facilities. Seed of a few native species were collected for propagation. The Forest Botanist also attended a field meeting to provide information to the Lassen County Planners for revegetation of a new county park.

Lichen monitoring for air quality continues in the Thousand Lakes and Caribou Wilderness Areas. New lichen transects were established in the Ishi Wilderness.

The Forest Botanist served as a member of a Forest NEPA task force to develop methods of improving and streamlining the NEPA process on the Forest, and was awarded a certificate of appreciation for the group's effort.

The Forest Botanist continued assisting with Land Management Planning documents, editing both the Forest Plan and EIS.

The Forest Botanist serves as the Forest contact for the ecology program, and attended meetings and shared information with the Forest on ecosystem classification and Research Natural Area (RNA) developments.

Interpretive activities (in addition to Wildflower Week) included an evening campfire slide show program, a talk at the Federal Women's Program Campout, and an interpretive walk for special needs campers at the Eagle Lake Children's Camp. A field trip was also led for a PNW survey team to familiarize them with the plants of the Forest.

A program implementation document for the Forest biological resources program was drafted, including an extensive section on the Forest's sensitive plant and other botany program. This document will assist us in setting long range goals and program development.

Additions were made to the Forest sensitive plant and wildflower slide collections, and additional collections were made for the Forest herbarium. A PC computer database was set up for herbarium labels for the Forest herbarium.

A partnership with the Susanville District of the BLM continues, as BLM and Forest Service botanists jointly monitored sensitive and special interest plant species, worked on wildflower week activities, and continued to share information about the local flora.

Forest botanical personnel continue to provide information to the public and researchers on plant species of the Forest. An update of the species list of all plant species recorded from the Forest (drafted in 1989) was begun.

Chuck Rowe and Kathy Turner of the Hat Creek Ranger District worked with the California Department of Forestry and Fire Protection (CDF) to minimize fire suppression impacts to a location containing several sensitive and special interest species during the Fountain Fire.

LAKE TAHOE BASIN MANAGMENT UNIT **********

1. Describe the botanical expertise and workforce on your forest

Botanical expertise is provided by the biologists on the unit. We have two permanent and two temporary wildlife biologists that conduct inventories and provide botanical input to environmental documents. Hydrologists and watershed restoration experts also provide botanical expertise to project implementation.

2. Amount and/or types of projects/acres surveyed for and numbers of biological evaluations written for sensitive plants in FY 92

As in the past, we spent the majority of the field season providing support services for a variety of projects. Sensitive plant surveys were conducted and Biological Evaluations were written for 16 projects. A total of 77 acres were covered prior to the implementation of land exchanges, road maintenance projects, special use permits and events, recreation facility construction and watershed restoration projects.

An additional 4 BE's were written for Environmental Assessments for one 12,000 acre grazing allotment and approximately 3,000 acres of salvage and fuelwood sales.

Exisiting populations of 4 sensitive plant species were monitored at 20 population sites over 32 acres of habitat.

3. Describe your forest accomplishments in sensitive plant management in FY 92. (Include such items as species management guide development, challenge cost-shares, wildflower week celebrations etc.

Our most exciting accomplishment this year was a cost-share project with the Garden Club of America. Six volunteers from the Bay Area surveyed approximately 21 acres of beach habitat for *Rorippa subumbellata*. The continued drought has lowered the level of Lake Tahoe substantially, which in turn has expanded this plant's potential habitat. The Garden Club volunteers provided a valuable service by surveying extensive areas of lakeshore that we did not have time to do ourselves.

Special mitigation measures were implemented for one *Rorippa subumbellata* population this year. Eighty plants were propogated from seed and planted out this fall to maintain a population of plants that were affected by a stream relocation project.

One of our unit biologists worked with Sierra Pacific Industries, a private timber company, to protect a population of *Arabis rigidissima* that was present in their proposed timber harvest area. Protection for this plant was also provided on a nearby Forest Service salvage sale .

An interim management guide for *Lewisia pygmaea* ssp. *longipetala* was completed as a cost-share project with the Tahoe and El Dorado national forests and the California Native Plant Society. This was started in FY 91 and fiscal responsibilities were reported then.

4. $$ spent on TES plant program during FY 92 by the following funding sources

Appropriated funds (all Forest Service sources & cost-share)	*$5,670*
Contributed funds & cost-share from non-Forest Service sources	*$3,000*
Knutson-Vandenberg funds	*$5,700*
Total Forest Plant Program	*$14,370*

5. Name of sensitive plant(s) and number of new occurrences discovered in FY 92

No new sensitive plants or occurrences were discovered in FY 92.

6. Other Forest plant program highlights

An innovative approach to renovation projects was implemented on the LTBMU this year. The watershed restoration crew provided a pine needle dump site for the public, and the needles were baled and used as mulch for 10 miles of road restoration. The success of this effort should be seen next year.

Native plant seeds were collected this year to start a seed bank to be shared by various agencies in the Lake Tahoe Basin. LTBMU biologists and members of the California Conservation Crew collected several pounds of bitterbrush seed that were sent to two nurseries for propagation. Plants will be set out bare root and containerized and evaluated for the successfulness of each method.

Approximately 5,000 berries of greenleaf manzanita (*Arctostaphylos patula*) were collected to test the possibility of propagation by seed. This seed was also sent to two nurseries for treatment.

The biologists provided a hands-on opportunity for 6th grade children at an environmental camp this year. The children planted native seedlings to improve wildlife habitat in a salvage timber sale area. The activity was well received, and continuing camps will give the children a chance to monitor the success of their efforts while benefiting their environment.

LOS PADRES NF **********

1. Describe the botanical expertise and workforce on your forest

The Los Padres hired Karen Danielsen as Forest Botanist. Mark Borchert continues as Forest Ecologist. In addition, District Wildlife Biologists (Lisa Walsh, Nancy Sandburg, Kevin Cooper, George Garcia, Sheryl Montgomery, and Jeff Kwasny) provide much needed support.

During FY 92, other Forest personnel provided help for specific projects. Terry Austin (District Resources/Recreation Technician), John Kelly (District Forester), and William Metz (District Assistant Forester) coordinated the establishment of a native tree nursery. Donna Garvey (Biological Technician) assisted with the revision of sensitive plant binders. Julie Thrupp (Fuels Officer, Sequoia NF) assisted with lichen monitoring.

2. Amount and/or types of projects/acres surveyed for and numbers of biological evaluations written for sensitive plants in FY 92

Number of biological evaluations: 27

PROJECT TYPE	*# OF SURVEYS*	*ACRES SURVEYED*
Special use permits	8	1744
Prescribed burns	4	2500
Habitat improvement	7	815
Trails	2	500
Mining	3	433
Grazing allotments	3	500

3. Describe your forest accomplishments in sensitive plant management in FY 92. (Include such items as species management guide development, challenge cost-shares, wildflower week celebrations etc.

- Monitored the following sensitive plant species:
  a. *Caulanthus californicus* (monitored by David Magney)
  b. *Chlorogalum purpureum* var. *reductum*
  c. *Fritillaria ojaiensis* (monitored by Rick Burgess, the California Native Plant Society, and Forest Botanist)

- Implemented revision of sensitive plant binders for each Ranger District

- Led wildflower walks for the California Native Plant Society and the Santa Barbara Botanic Garden.

- Gave slide presentations to the California Native Plant Society and the Los Padres Interpretive Association.

- Developed Five Year Botany Program Plan

4. $$ spent on TES plant program during FY 92 by the following funding sources

Appropriated funds (all Forest Service sources & cost-share)	$ *51,000*
Contributed funds & cost-share from non-Forest Service sources	$ *2,500*
Knutson-Vandenberg funds	$ *-0-*

Total Forest Plant Program *$ 53,500*

5. Name of sensitive plant(s) and number of new occurrences discovered in FY 92

SPECIES	*OCCURRENCES*
Monardella linoides ssp. *oblonga*	6
Fritillaria ojaiensis	4
Eriastrum hooveri	1
Hollisteria lanata	1

6. Other Forest plant program highlights

- Implemented the following monitoring projects:
  a. Chaparral response to winter prescribed burns (Santa Barbara RD).
  b. Riparian vegetation inside and outside cattle exclosures (Santa Lucia RD)
  c. Lichens in the Ventana Wilderness (Monterey RD) and the San Rafael Wilderness (Santa Lucia RD) for the Air Quality Monitoring Program.

- Completed third year monitoring of *Zigadenus fremontii* response to wildfire (Santa Barbara RD). Cooperative project with the University of California, Santa Barbara.

- Completed sixth year monitoring of blue oak acorn production (Santa Lucia RD). Cooperative project with the University of California, Santa Barbara.

- The Santa Barbara Botanic Garden continued floristic surveys at Lion Den Botanical Area (Monterey RD) and Cuesta Ridge Botanical Area (Santa Lucia RD)

- Collected over 100 voucher specimens for the Forest vascular plant checklist. Specimens will be housed at the Santa Barbara Botanic Garden.

- Established a nursery for conifers, oaks, and willows with cooperation from the Rose Valley Sheriff's Work Camp. The County has recently decided not to renew its permit for the Work Camp, leaving the fate of the nursery uncertain.

MENDOCINO NF **********

1. Describe the botanical expertise and workforce on your forest.

Forestry Tech Dave Isle continues to serve as the plant coordinator on the forest.

2. Amount and/or types of projects/acres surveyed for and numbers of biological evaluations written for sensitive plants in FY 92.

Number	*Type Project*	*Acres Surveyed*	*Biological Eval./Input*
1	Off Road Vehicle Event	0	1
1	Road Route Recon	2	1
2	Trail Reconnaissance	7.4	2
1	Proposed Land Exchange	77.5	1
1	Vegetation Type Conversion	0	1
7	Timber Sales	1530	7

3. Describe your forest accomplishments in sensitive plant management in FY 92. (Include such items as species management guide development, challenge cost-shares, wildflower week celebrations etc.)

Reconnaissance of about 500 acres of potential *Madia stebbinsii* habitat was performed by Niall McCarten as part of his bi-Forest Cost-Share Agreement with the Shasta-Trinity and the Mendocino National Forests. The Mendocino portion of this C-S was $1000.00

A Participating Agreement for production of a "camera-ready" Mendocino National Forest Sensitive Plant Handbook was negotiated with Niall McCarten for accomplishment in FY 93.

4. $$ spent on TES plant program during FY 92 by the following funding sources

Appropriated funds (all Forest Service sources & cost-share)	*$35,584.00*
Contributed funds & cost-share from non-Forest Service sources	$ **
Knutson-Vandenberg funds	*$ 7,491.77*
Total Forest Plant Program	*$43,075.77*

(** - The Shasta-Trinity NF annual botany report contains some Cost-Share Agreement contributed funds from our cooperative C-S project.)

5. Name of sensitive plant(s) and number of new occurrences discovered in FY 92

Brodiaea coronaria ssp. *rosea*	2
Epilobium nivium	1
Madia stebbinsii	3

6. Other forest plant program highlights

Here are reports on botany-related activities from the four Districts and some overall input from the S.O.

CORNING DISTRICT - MOLLY FULLER:

Two of our "watershed improvement" projects utilized native grasses:

1500 slender hairgrass (*Deschampsia elongata*, DEEL) bare root seedlings were planted on 0.5 acre of the bare corner of the Rocky Cabin meadow, at a cost of $830.00.

0.5 acre was treated during the 3 Prong Check Dam project, where ponds behind check dams were filled in and the bare cut bank and berm blocking the road to the lower meadow was planted with DEEL. This was a $1,400.00 project.

About $100.00 was spent for 0.5 of a day of monitoring the results of these revegetation projects this field season. It was very successful. There was "a sea of grass" (DEEL) 3 to 3.5 feet tall growing on both locations (3 Prong and Rocky Cabin).

D-1 contributed $500.00 to the '92 MAST C-S and provided facilities and a spectacular floral bloom for this years Forest Sensitive Plant training session.

STONYFORD RANGER DISTRICT - JEFF APPLEGATE:

The Hill Bill project on Grassy Patch included between 2 and 3 acres of seeding with native grasses. The Alder Engine spent 3 days on this project (2 days collecting seed around the Grassy Patch area and bagging it and one day raking the material into the ground). Most of the grass seed was from Lemmon Needlegrass (*Stipa lemmonii*), blue wild rye (*Elymus glaucus*), and California fescue (*Festuca californica*), though there may have been a small amount of pine bluegrass (*Poa scabrella*) and California melic (*Melica californica*). The tractor ripping of the old four wheel drive and motorcycle track-rutted trails and the seeding and mulching portion of this project cost approximately $4154.00.

We eradicated 10 acres of noxious weeds in FY'92 at a cost of approximately $6409.00. This included 2 acres of tree tobacco (*Nicotiana glauca*) along the Little Stony Road (encroaching on serpentine endemics), 4 acres of star thistle at the firefighter memorial, 1 acre of scotch broom on 18N01, and 3 acres of thistle at Lower Letts meadow.

UPPER LAKE RANGER DISTRICT - LORI STANSBERRY:

Sensitive Plant Work

The Bevans Ridge 200 acre type conversion and an OHV event received pre-field sensitive plant evaluation. The Ruppert Timber Sale area (1200 acres) received pre-field evaluation and on-site reconnaissance costing approximately $500.00.

Non-Sensitive Plants

100 acre wildlife seeding. Species: Blando Brome, Zorro Fescue, Rose Clover, Blue Wild Rye, California Brome, Molate Fescue. Cost: $8,426.00.

Bloody Rock Trail. Species: Zorro Fescue, Rose Clover, Blue Wild Rye, California Brome, Molate Fescue. Cost: $1,020.00 for 7-10 acres seeded. 3 person days @ $80.00 X 3 persons = $720.00.

OHV Trail Maintenance. Species: Blando Brome, Blue Wild Rye, Clover, Zorro Fescue, Molate Fescue, California Brome. $2500.00 for 10 acres seeded and mulched. 10 person days @ $80.00 X 3 people = $2400.00

Snow fire reseeding: used native/non-native grass mix on hand: *Bromus mollis*, California Brome, Blue Wildrye, Clover, Zorro Fescue, and Molate Fescue. ($500.00 seed) + (5 person days @ $80.00 X 5 people = $2000.00)

There were six different species of native perennial grass planted from seed gathered on the District and then grown under contract. After each day's planting, the grasses were sprayed with water to help increase their chances for survival. Providing we get some precipitation this winter, the grasses should establish themselves well. I think what we should be concerned with here is cost. We planted 9,220 grass seedlings on approximately 2 acres and spent 400 hours getting them planted. The total cost for this project is right around $7,000.00. This is not very cost effective. I firmly believe that we should encourage the use of native species in our projects, particularly where the objective is to increase the value of wildlife forage. If we continue our efforts towards using native species in a way that is both cost effective and beneficial, such as purchasing native grass seed, we are likely to receive a more positive response from Staff rather than expecting them to buy into a very expensive, labor intensive project such as this one.

Follow-up Westside north and south native grass monitoring:

1 work day (6/23/92) was spent monitoring (@ $120.00). As a whole, the areas and all species looked very good (better than I had hoped for). The California Brome, Woodlands Brome and Slender Hairgrass varied in height from two to four feet. The Blue Wild Rye was also doing well. California Fescue and Pine Bluegrass did not show as much growth, possibly due to soil types, but they were all alive. Although the area was within a grazing allotment, the cattle did not graze it.

COVELO RANGER DISTRICT - MIKE VANDAME:

This year we conducted prefield review on about 7500 acres, for a variety of projects. Of those 7500 acres, only 20 acres (on the Fossil Timber Sale) required a field survey. This is typical, because of the fact that the amount of potential habitat is small, and most of our potential habitat consists of low productivity, high elevation sites. Most proposed projects and activities take place outside of these habitat types. Total cost of the reviews was $450.00.

We also did some experimental harsh site rehabilitation. The site was a ridgetop at about 6500 feet elevation which has only a sparse cover of vegetation. The area was heavily grazed by sheep and repetitively burned in the late 1800's and early 1900's, and has been grazed by cattle off and on since the early 1900's. We are currently conducting environmental analysis to determine the future of grazing on this allotment; any future grazing strategy will need to provide for the protection of this sensitive watershed area from improper grazing.

The method of rehabilitation was to do intensive spot treatment on about nine acres. The object was to establish islands of "nurse vegetation" from which natural revegetation could radiate over time. This is to mimic the pattern of vegetation establishment in adjacent areas since the cessation of burning and sheep grazing. These islands alter the structure and microsite conditions in their immediate vicinity so that it is more conducive to further vegetation establishment, by providing such amenities as enhanced moisture accumulation and retention, increased shading, increased nutrient cycling and retention, and increased biological activity.

The treatment consisted of liming and fertilizing an area about six feet in diameter, placing a bale of alfalfa in the center, placing seed and mulch around the bale and then placing wire mesh around the whole affair to provide some initial protection from large herbivores. Local native plant seeds were used as much

as possible, with outside sources used for those species which we couldn't get enough seed locally. The hay bale is to provide several microsite modifications: 1) to provide vertical structure for snow catchment and summertime shading for the first year or two; 2) to provide prolonged availability of soil moisture for establishing vegetation to tap into under the bale; 3) to provide a two to three year nutrient sink to help the establishing vegetation off to a good start. We chose late cut alfalfa for two reasons: 1) it is high in nitrogen and phosphorus; and 2) it is relatively weed free compared to other hay or straw. The total cost per acre, including overhead was about $500.00 per acre. We'll have to wait now to see how it works. I'm sure we'll have some good learning from this.

John Biggin and Debbie Fleming also made a small collection of Bowl Clover (*Trifolium cyathiferum*) seeds for a germination and seed production test at Chico Tree Improvement Center. We're interested in developing some native nitrogen-fixing forbs for our revegetation work, and this is a start.

SUPERVISOR'S OFFICE - DAVID ISLE:

While there was only one Forest Sensitive Plant Training Session this year, several on-the-job botanical enrichment experiences were provided to Forest Service personnel during reconnaissance work on proposed timber sales, trails and land exchanges. Native plant diversity and sensitive plants were also focused upon during a high school class presentation (with approximately 40 live plant specimens as well as slides), a two month long display of botanical photographs and posters at the S.O., and a native grass display at the Chico Tree Improvement Center open house.

A newspaper article on the Regional rust resistant sugar pine program, a local newspaper article and a Forest newsletter article on the S.O. ("wildflower Week") botanical display and Forest sensitive plant training as well as an article in the first R-5 Botany Newsletter on the sugar pine symposim at Davis were efforts to better inform both the public and our employees about botanical values.

The participating agreement negotiated with Niall McCarten during FY 92 for the production of a ("camera ready") MNF sensitive plant handbook in FY 93 should result in a much-needed handbook for the field identification of our sensitive Forest plants. (It won't be completed until the end of FY 93, so it will not be printed until FY 94.)

Niall also completed the field work in FY'92 for a Cost-Share Agreement with the Shasta-Trinity NF that included *Madia stebbinsii* (MAST) reconnaissance work on the two northern Districts of the Mendocino. His timely interim coordination on this project resulted in field viewing of MAST in bloom by those attending this years Forest Sensitive Plant Training Session.

Ecological Unit Inventory (Coordinated Research Inventory) study on the Mendocino was increased from 5,000 to 10,000 acres this year. Field plotwork and the mapping of potential natural vegetation for this study area allowed me the opportunity to visit several of our Forest's potential habitats for sensitive plants.

Another by-product of this years EUI study was the observation of some of the native plants that grow in areas similar to those that we are trying to revegetate or stabilize and the collection of some small seed samples for testing. (Some of this seed went into the current Buck Rock revegetation project and some will go into an upcoming watershed project at Bowery Flat. Small samples of several species were sent to the Redwood City Seed Company for germination testing. Additional stratification, germination and growth observations of a few of these samples at J. Herbert Stone Nursery and Forbes Nursery in Oregon may identify which species hold promise for some of our future Forest revegetation projects.

One of my Forest goals is to be able to provide alternative local, native species for a variety of Forest revegetation projects. The Districts would be able to avoid the use of exotics if they had alternatives that met the "big three" hurdles of availability, cost and proven "track records." We look forward to realistic incremental progress as funding, policy and partnerships grow toward that goal.

Some of the other Forest botanical work this year included a site visit to the proposed Wilder Research Natural Area, plant identification for a wildlife biologist doing deer inventory work (and others), collection of Scarlet Bugler (*Penstemon centranthifolius*) seed for propagation tests at Chico Tree Improvement Center, and responding to a host of other botany-related requests ranging from Biological Evaluations to research-related requests.

MODOC NF **********

1. Describe the botanical expertise and workforce on your forest

The Forest Wildlife Biologist (Tom Ratcliff) is the Sensitive Plant Program leader. Each ranger district has a Sensitive Plant Coordinator who is responsible for surveys, documentation, etc. The Zone 2 Ecologist (Sydney Smith) provides technical assistance with plant identification, habitats, coordination as needed.

One seasonal Ecosystem Crew botanist worked for a pay period on a sensitive plant survey.

2. Amount and/or types of projects/acres surveyed for and numbers of biological evaluations written for sensitive plants in FY 92

Some ten surveys were conducted for the following types of projects: Green timber sales, watershed-level EIS (Mt. Vida); thinning sales, road locations, PGE/PGT pipeline; watershed and range improvement projects; BPA powerline & vicinity survey; monitoring for CALO2; MIPY; ANFL. Biological Evaluations were written for at least two of these projects.

3. Describe your forest accomplishments in sensitive plant management in FY 92. (Include such items as species management guide development, challenge cost-shares, wildflower week celebrations etc.

The Forest advertised and recruited for a Sensitive Plant Botanist in FY 92 because of a long-standing need for focussed program management. The position was not filled because of uncertainty of funding past FY 92.

4. $$ spent on TES plant program during FY 92 by the following funding sources

Appropriated funds (all Forest Service sources & cost-share)	$ *10,000*
Contributed funds & cost-share from non-Forest Service sources	$ *-0-*
Knutson-Vandenberg funds	$ *-0-*
Total Forest Plant Program	$ *10,000*

5. Name of sensitive plant(s) and number of new occurrences discovered in FY 92

Antennaria flagellaris:	2
Calochortus longibarbatus spp. *longibarbatus*	3 near Egg Lake

6. Other Forest plant program highlights

See item #3.

PLUMAS NF **********

1. Describe the botanical expertise and workforce on your forest

The Plumas has a permanent full-time Forest Botanist, Linnea Hanson. In FY 92, Joan Reynolds was the permanent full-time Assistant Forest Botanist. Stacy Scott is the permanent full-time Milford District Botanist. In addition, each District Ranger assigns a Sensitive Plant Coordinator to coordinate all district botanical needs and to serve as the primary link between the district and the Forest Botanist. The district sensitive plant coordinators for FY 92 were:

Beckwourth RD-Shannon Quinsey, Range Conservationist
Greenville RD-Gary Rotta, Wildlife Biologist
La Porte RD-Karen Lee, Biological Technician
Oroville RD-Vince Carter, Forester
Milford RD-Stacy Scott, Botanist
Quincy RD-Dave Johns, Forestry Technician

District Botanists were hired to conduct sensitive plant surveys, write Biological Evaluations (BE's) for proposed timber sales and conduct monitoring to assess the impacts of timber sale activities on sensitive plant species. 14 NTE Botanists and 1 Biological Aid were hired for the FY 92 field season and were:

Beckwourth RD-Lawrence Janeway, Garrett Gibson, Janice Cutler and Laurie Lamm
Greenville RD-Hal Durio
La Porte RD-Loren Gehrung
Oroville RD-Barbara Castro, Jacque Jurewicz, Gail Kuenster and Jenny Marr
Milford RD-John Dittes, Diane Mastalir and Marky Stelmok
Quincy RD-Jim Battagin and Mike Cutler

This year the Districts shared their botanists as workload demands arose throughout the field season. In the early spring, La Porte and Oroville RD used a Beckwourth RD botanist. The Milford Distirct used 8 botanists from throughout the forest for a two-week period for an emergency salvage effort. And the Quincy District botanists worked on both Oroville and Quincy to help with timber salvage.

On the districts, personnel besides the botanists have been trained to conduct plant surveys and to prepare BE's to be reviewed by District and Forest Botanists. On the Greenville RD, co-op students and timber personnel assisted with field surveys. On the La Porte RD, other personnel besides the botanist that contributed to the program were the District coordinator, wildlife, timber, watershed and recreation personnel. For the Oroville RD, Dick Edwards, Recreation, and Vince Carter, Logging Systems, conducted surveys of salvage sales and Henrietta Haaziq, Silviculture, and Sally Ellis, Recreation, assisted with the sensitive plant monitoring. A volunteer from Germany, Beatrice Leypold, helped with plant surveys on the Milford District. On the Quincy RD, Dave Johns and Myrna Berry, Timber,and the marking crew completed sensitive plant surveys for timber sales and wrote several BE's.

Volunteers assisted the Plumas Plant Program with their knowledge of plants of the area. Toni Fauver completed her book on the *Wildflower Walking in Lakes Basin of the Northern Sierra* and lead hikes there this summer. Vern Oswald and Lowell Ahart, local botanists, have assisted with species with taxonomic problems and also with uncommon species found on the Plumas. Glen Clifton is developing a Flora of the Plumas National Forest and has identified many uncommon plants on the forest.

2. Amount and/or types of projects/acres surveyed for and numbers of biological evaluations written for sensitive plants in FY 92

On the Plumas, each district is responsible for the surveying for sensitive plants in proposed projects. If sensitive plants are located, then the Forest or Assistant Forest Botanist is consulted, as needed, for technical advice. The Forest and Assistant Forest Botanist reviewed, edited and signed BE's mainly for proposed salvage sales.

		Acres Surveyed	BE's
Timber	69 Salvage Sales	17,182	48
	16 Green Sales	5,194	10
	10 Misc. Sales	694	7
Resources		806.2	27
	26 Special Uses and Recreation		
	4 Mining Claims		
	3 Land Exchanges		
	15 Rehabilitation Projects		
Fire	6 Fire Camp Site and Fuelbreak Projects	270	
	1 Underburn	40	1
Range	5 Allotments	680	1
	2 Range Improvement	121	
PLUMAS NF TOTALS		24,946.2 acres	94 BE'S

3. Describe your forest accomplishments in sensitive plant management in FY 92. (Include such items as species management guide development, challenge cost-shares, wildflower week celebrations etc.)

MONITORING: Monitoring was conducted to assess the impact of timber sale activities and cattle grazing on 8 sensitive and 1 special interest plant species with 2,300 acres involved. Held a monitoring meeting on the Plumas.

SPECIES MGMT GUIDES: The interim management guide for the Sierra Valley and Plumas Ivesias (*Ivesia aperta* and *Ivesia sericoleuca*) with the Tahoe and Toiyabe NF was signed. An interforest meeting to discuss the status of the *Silene invisa* guide occurred on the Tahoe NF with participation from the Plumas, Eldorado and Lassen. An interforest meeting to discuss the development of management areas for *Penstemon personatus* occurred on the Plumas with participation from the Lassen and BLM.

CHALLENGE COST SHARE PROJECTS: Isozyme analysis of the variations of *Fritillaria eastwoodiae*, *Pinus washoensis* and *Vaccinium coccinium* has continued with Jim Pushnik of California State University, Chico. An evaluation of the sensitive plant monitoring has begun with Ulla Yandel and Barbara Seeger of the University of Nevada, Reno. The development of a draft guide to the sensitive and special interest plants of the Plumas has begun with the Plumas National Forest Interpretive Association. A botanical investigation of *Senecio eurycephalus* var *lewisrosei* has begun with The Nature Conservancy. A watershed management plan for the Butterfly Valley Management has begun with the Plumas Corporation.

WILDFLOWER CELEBRATION: A display was developed with Public Affairs, "Where Have All the Wildflowers Gone" and included a brochure which were displayed at the Endangered Species Fair and in the District and forest offices on the Plumas NF. Field trips to Butterfly Valley Botanical Area and Lakes Basin Recreation Area with the California Native Plant Society were sponsored by the Plumas NF.

PROGRAM DEVELOPMENT: Developed guidelines and conducted training session in writing plant BE's. Assisted with district training for forest personnel in awareness of sensitive plants. Conducted orientation training for temporary botanists. Held meeting with permanent botanists on forest to plan direction of program and begin development of program planning document. Forest Botanist received National TES Species Leadership Award. Forest Botanist conducted a field trip with Six Rivers and Lassen to review the variation in *Sanicula tracyi*. Forest Botanist conducted a field trip with S.P. Van Der Kloet, Acadia University,

Nova Scotia, to review the variation in *Vaccinium coccinium* with Oroville and La Porte RD and the Tahoe NF. Continued to cooperate with the Feather Falls School, Butte County, in selling Plumas NF Sensitive Plant T-Shirts with $400.00 in proceeds being donated for nature study.

Planned field trips for District Botanists on:

1. How to monitor different plant species on the Milford RD with Dr. Robert Nowak, Intermountain Region plant ecologist and Barbara Seeger, graduate student at University of Nevada, Reno.

2. Native Grass rehabilitation projects on Quincy RD with Scott Stewart of Conservaseed and Craig Dremann of Redwood City Seed Company.

3. Biodiversity analysis of the Bald Mountain Compartment on the La Porte RD.

4. Sensitive Plant Alternative and development of Penstemon Management Areas for the Arkansas Ravine Timber Sale on the Oroville RD.

BECKWOURTH RD: Summarized the Sensitive Plant Program and work of a District Botanist to a visiting group of Junior High summer camp students.

GREENVILLE RD:Conducted Botany training day. Served as a volunteer to update district and forest plant records during the winter.

LA PORTE RD:Sponsored district training day. Started a district plant garden. Developed district Pacific Yew policy and inventory form. Attempted to locate *Chenopodium gigantospermum* but was no longer in existence. Found two new taxa for the forest, *Epilobium luteum*, CNPS List 2 and *Clarkia mildrediae*, CNPS List 4.

OROVILLE RD:Development of Sensitive Plant Alternative for the Arkansas Ravine. Timber Sale which included the design and proposal of 11 Penstemon Management Areas(PMAs) as well as prescriptions for activities outside the PMAs. Collection of Vaccinium specimens for S.P. Van der Kloet.

MILFORD RD: Presented monitoring projects and sensitive plant information to livestock permitees and other interested publics at the Milford RD Range field day. Amended two grazing Allotment Management Plans to include management strategies for sensitive plants within the allotments.

QUINCY RD: Conducted annual training, sensitive plant garden write-up, and collected *Lupinus dalesae* seed from a cutbank within a passing lane project for re-seeding after completion. Started a list of unusual plants of the Plumas NF. Presentation to elementary school summer school 4th grade on botany, Sensitive Plant Program and how to press plants.

4. $$ spent on TES plant program during FY 92 by the following funding sources

Appropriated funds (all Forest Service sources & cost-share)	*$308,969.0*
Contributed funds & cost-share from non-Forest Service sources	$
Knutson-Vandenberg funds	*$ 40,195.0*
Total Forest Plant Program	*$349,164.0*

5. Name of sensitive plant(s) and number of new occurrences discovered in FY 92

SPECIES	OCCURRENCES
SENSITIVE	
Arabis constancei	4
Astragalus lentiformis	3 plus 5 enlarged
Fritillaria eastwoodiae	3
Lupinus dalesae	7
Ivesia aperta	1
Ivesia baileyi	4
Ivesia sericoleuca	4
Penstemon personatus	3 plus 5 enlarged
Senecio eurycephalus var. *lewisrosei*	1
Silene invisa	3
Vaccinium coccinium	8 plus 3 enlarged
SPECIAL INTEREST	
Carex geyeri	41
Cupressus bakeri	1
Cypripedium californicum	1
Cypripedium fasciculatum	3
Darlingtonia californica	1
Drosera rotundifolia	1
Taxus brevifolia	1

6. Other Forest plant program highlights

STRENGTHING PARTNERSHIPS: Participated in meetings of the Northern Forest Botanists of California. Forest Botanist attended WO Biologist Shortcourse on Biological Monitoring. Forest Botanist attended monthly meetings of the California Native Plant Society, Mt. Lassen chapter. Presentations on California Plant Communities were given at Feather Falls School and Marigold School by the Forest Botanist. Forest Botanist identified plants for the Heinz Creek Nature Trail with Concow School with Oroville RD.

SPECIAL INTEREST AREAS (SIA'S): Finalized the reports of the proposed SIA's developed through a cost share project with CNPS in 1991 and presented the work done to date and need for an establishment process to the Plumas Leadership Team. Forest Botanist participated in the Mac Nab Cypress Special Interest Area Awareness Day. Oroville RD intern beginning a management guide for the Macnab Cypress area. The development of an overall watershed plan for the Butterfly Botanical Area (BVBA) was begun through the Interdisciplinary process with the Asst. Forest Botanist as ID team leader. Stand exams including mapping, photo point monitoring for vegetation impacts in high use area, inventory and interpretive signing, and propose KV projects were developed by the Asst. Forest Botanist for BVBA. Beckwourth RD was involved with a special project in the BVBA. And the Quincy RD participated in ID team and surveyed 600 acres of the area to establish community types. Quincy RD took two elementary school classes on an interpretive tour of BVBA.

RESEARCH NATURAL AREAS (RNA'S): Asst. Forest Botanist conducted initial field investigation and provided funding proposal for the Mud Lake RNA.

WILDERNESS: Input to the Wilderness Management Plan revision for Bucks Lake Wilderness with assistance from Oroville RD occurred.

AIR QUALITY PROGRAM: ($4,000 in air quality funding). Conducted field work in the wilderness to determine tree and rock lichen monitoring locations with assistance from Oroville RD. Established two of four monitoring locations that have been identified. Asst. Forest Botanist identified lichen with a verification contract with the Santa Barbara Natural History Museum.

WATERSHED REAHB PROJECTS: ($6,000 in watershed funding) for Assistant Forest Botanist. Surveyed 1000 acres for rare plants, mapped vegetation and member of core ID team. Developed revegetation specifications and ordered container stock. Developed revegetation specifications for test areas to seed with native grasses using various planting methodologies. Completed field inventories, rare plant surveys and wetland delineations for 2 mile stream course.

NATIVE GRASS WORK: Forest Botanist attended Conservaseed Open House. Assistant Forest botanist developed native grass recommendations for forest. The La Porte RD collected and identified areas to collect seed for native grasses and shrubs; three native grass seed trial areas established. The Quincy RD added grass stands to native grass location map for collection, sent seed from native grasses to Oregon for growing and development of cost estimates for production, used native grass seed in all revegetation projects, entered native grass stands into stand record system, utilized resource crew to harvest native grasses, constructed a fence to protect native grass from grazing damage.

BIODIVERSITY: Assistant Forest Botanist provided riparian vegetation training for fisheries biologists. La Porte RD developed Biodiversity Area Record and identified, documented and flagged 9 new biodiversity areas. The Milford RD collected plant community data at two site prep locations to compare tilled and non-tilled areas.

MISC FOREST PRODUCTS: Forest Botanist has begun to develop a procedure for requests on the forest for products other than conifers.

SAN BERNARDINO NF **********

1. Describe the botanical expertise and workforce on your forest

The Forest continued to fund 1.8 permanent FTE's, one Forest Botanist in the Supervisor's Office and one District Botanist on the Big Bear Ranger District. These positions are each funded approximately 60% from appropriated wildlife dollars; additional funding comes from coop accounts and other program areas such as recreation, timber, and lands.

The Big Bear Ranger District hired 5 temporary botanists during FY 92: Julie Greene worked part-time between October and December 1991 before she returned to school full time; Sarah Chaney was hired in April 1992 on a NTE appointment but left in June for a permanent appointment with the National Park Service; and Mike Gonella, Jody Sawasaki, Rachel Shea and Rebecca Yahr worked on 180 day appointments for the summer before returning to college. Jody remains on the District where she will continue to work on revegetation and monitoring.

2. Amount and/or types of projects/acres surveyed for and numbers of biological evaluations written for sensitive plants in FY 92

Plant surveys were conducted on a variety of projects including:

TYPE	*NUMBER OF PROJECTS*	*ACRES/MILES*
Fuelwood Sales/Site Prep/TSI areas	5	216
Utility Lines	1	5 miles
Mining (New development)	1	300
Mining (reclamation)	1	36
Hiking/Biking trails	2	126
Organizational Camp Developments	4	60
OHV routes	2	72
Land Exchanges/Acquisitions	3	155
Ski Areas	4	113
Other Recreation Projects	4	205
Misc.	*7*	*287*

Consultants conduct plant surveys and complete NEPA documentation on a number of projects on the Forest each year. In these cases the Botanists work with the consultants on survey needs and document review. These projects include pipelines, utilities and a land exchange.

Biological evaluations were completed or are in progress for activities that have potential to affect sensitive plant species.

3. Describe your forest accomplishments in sensitive plant management in FY 92. (Include such items as species management guide development, challenge cost-shares, wildflower week celebrations etc.)

Conservation Planning:

The USFWS proposed five plant species endemic to carbonate substrates for listing as endangered on November 19, 1992. The District prepared extensive comments on this listing proposal. These comments were sent from the Forest through the Region to the Washington Office where they were finalized and sent to USFWS.

Work on the Habitat Management Guide for the species mentioned above continued. Activities included obtaining information identified by the planning team as necessary to complete a conservation strategy. Information acquisition focused on revegetation potential and techniques, vegetation description, additional population surveys and genetic variation of *Lesquerella kingii* ssp. *bernardina*. Data on geology and vegetation plot location are being digitized by Jenny Rechel at the Riverside Fire Lab. In addition, reclamation standards for the Big Bear Ranger District were finalized. Two meetings were held with participants on the planning team.

Connie Rutherford (USFWS) and Dick Waer (BLM) visited to discuss survey priorities on BLM land for the species proposed for listing and to see the Gordon Quarry revegetation site.

Connie Rutherford and Tim Thomas (USFWS) visited the Forest to see pebble plain habitat and locations of several proposed activities that might affect plant species proposed for listing.

Botanists are participating in a Habitat Conservation Planning process for the Big Bear Basin. The City of Big Bear Lake, USFWS, Soil Conservation Service, CalTrans, the Municipal Water District, and private entities have been involved to date.

Roxanne Bittman, Heather Townsend and Tim Nosal of the California Natural Diversity Database visited the Big Bear Ranger District to work with botanists on mapping element occurrences and digitizing them for the Databases' GIS. During their two day stay we visited many rare plant communities and populations and reviewed the maps they had completed.

Monitoring:

We completed qualitative pebble plain monitoring activities and quantitative monitoring of *Thelypodium stenopetalum* and *Sidalcea pedata* meadow habitat.

We completed monitoring of effects of fuelwood harvest on *Phlox dolicantha* and effects of recreation special use events on *Mimulus purpureus*, *Arabis parishii* and *Castilleja cinerea*.

Botanists participated on a task force to develop monitoring protocols for documenting implementation, effectiveness and validation of the Forest Land Management Plan.

Revegetation and Restoration:

The Forest made considerable advances in revegetation and restoration of degraded ecosystems over the last year. Accomplishments in this area are summarized below:

The Friends of Big Bear Valley Preserve (the Big Bear Ranger District's Interpretive Association) donated a 7' x 16' greenhouse and plant propagation supplies valued at $4,400 for native plant propagation. This greenhouse will become a propagation house for starting seedlings and cuttings of site specific native plants for revegetation projects. This greenhouse will be complemented by a 14' x 20' greenhouse in October 1993.

We acquired approximately $15,000 worth of confiscated plant propagation materials including pots, hoses, grow-lights, timers, tools and books from the Nevada County Sheriff's Departments. This acquisition was facilitated by Ken Carlton, Supervisory Special Agent on the Tahoe National Forest.

We developed a cooperative agreement between the Forest and The Center for Arid Land Restoration at Joshua Tree National Monument whereby the Center grew plants for two revegetation projects in exchange for a combination of FS labor and purchase of materials.

We organized an information sharing meeting where Bob Moon, Chief of Resource Management at Joshua Tree National Monument and expert on revegetation in arid ecosystems, visited several mine sites to give us suggestions on revegetation techniques. After the site visits he gave a presentation on revegetation to the mining companies that operate on the Forest. Approximately 35 mining company employees, consultants and agency personnel attended the presentation.

We developed a revegetation plan for Gordon Quarry that will compare 8 different revegetation treatments including seeding, transplanting and planting containerized stock of varying sizes. This project is being completed as a Challenge Cost Share by the Forest Service, California Department of Fish and Game and Pfizer, Incorporated. We collected seed, salvaged plants and had plants grown from seed this fiscal year. The quarry will be reshaped (Pfizer's contribution) and plants will be planted in FY 93.

The Big Bear District purchased a seed cleaning machine that will help to reduce the time it takes to process seed collected for revegetation projects.

In April we discovered that a front end loader entered an area closed to vehicles within the Holcomb Valley/North Baldwin Lake Special Interest Area. While in the closed area the loader damaged pebble plain and pinyon woodland habitats, leaving ruts up to 2 feet deep in some of the wetter areas. Botanists spent a significant amount of time investigating the incident, documenting damage and developing a rehabilitation plan. These activities were not in our annual program of work, but due to the severity of the damage and the significance of the resource they were accomplished to the exclusion of other anticipated work. Special Investigator Denese Stokes did an outstanding job on this case, getting full confessions out of all persons involved after 4 months of persistence with repeated interviews and questioning. The County of San Bernardino is being held responsible for all damages and investigation costs which total over $174,000.

Protection and Improvement of Habitat for Sensitive Plant Species:

Erected fence along an established jeep trail to protect *Orthocarpus lasiorhynchus* being impacted by vehicle activity.

Developed protection project with Deerlick Fire Station to protect a population of *Orthocarpus lasiorhynchus* to be implemented in FY93.

Fences were built to protect pebble plain habitat on South Baldwin Ridge and Gold Hill.

We built fences to add protection to the Sawmill Pebble Plain through the cooperation of adjacent private landowners.

Fences at all pebble plain sites were patrolled and maintained by: botanists; Fire Prevention Technicians Mark Hensley and Brenda Lindsay; Fire Suppression staff from the Fawnskin Station; and Off-Highway Vehicle Patrols Greg Hoffman and Tom Johnston

Fences protecting *Thelypodium stenopetalum* at Belleville were patrolled and maintained by Fire Prevention Technician Mark Hensley adn Botanists.

4. $$ spent on TES plant program during FY 92 by the following funding sources

Appropriated funds (all Forest Service sources & cost-share)	$ *86,000*
Contributed funds & cost-share from non-Forest Service sources	$ *63,400*
Knutson-Vandenberg funds	$ *0*
Total Forest Plant Program	$ *149,400*

5. Name of sensitive plant(s) and number of new occurrences discovered in FY 92

SPECIES	*# OCCURRENCES*
Astragalus albens	1
Erigeron parishii	1
Eriogonum ovalifolium ssp. *vineum*	2
Oxytheca parishii var. *goodmaniana*	3
Orthocarpus lasiorhynchus	5[1]
Lilium parryi	7[2]

[1] One population located by Scott White of Tierra Madre Consultants.

[2] Four populations located by volunteer Dane Winkleman, one population located by Scott White of Tierra Madre Consultants, one population located by Diane Elam, a graduate student at UC Riverside, and one population located by the Forest's fish crew during stream inventories.

In addition, occurrence boundaries were extended at 8 *Eriogonum ovalifolium* ssp. *vineum*, 5 *Astragalus albens* and 2 *Erigeron parishii* and 1 *Horkelia wilderae* occurrences.

6. Other Forest plant program highlights

Interpretation, Education and Networking, External:

Botanists gave presentations to many groups including an ecology class at University of Redlands, the San Diego Chapter of the California Native Plant Society, the Rare Plant Communities Symposium at the American Association for the Advancement of Science meetings, a class from Big Bear Elementary School and Forest volunteers. We also assisted the California Native Plant Society with training members in their recently developed plant community sampling protocol.

In order to celebrate wildflowers, the Big Bear Ranger District developed a plant identification photo book for the front office. This book shows habit and close-up photos of more than 50 plant species found on the District. Photos are organized by flower color.

Botanists led two wildflower walks and one field trip on plant communities of the San Bernardino Mountains for the Friends of Big Bear Valley Preserve.

Botanists developed a handout on plant communities of the San Bernardino Mountains and revised handouts on TES plant distributions and habitats.

Botanists assisted an organizational camp with plant identification and Native American uses for a nature trail.

Began work with the Arrowhead Ranger District on development of an interpretive trail which will include archeology, plants and wildlife.

Assisted with developing themes for the Big Bear Ranger District Visitor Center.

Botanists and biologists met with Dr. Robert Mohlenbrock to assist him in developing several articles for his "This Land" feature in Natural History Magazine. These articles will feature plants endemic to carbonate soils (March 1993), pebble plains (June 1993), Garner Valley, and Joshua Trees.

Assisted Mark Egger of the Washington Native Plant Society in taking photographs of *Castilleja* on the Forest for an upcoming book.

Assisted Southern California Edison photographer Greg O'Laughlin with locating and identifying TES plants so he could photograph them for use in a calendar on endangered species.

Developed an interpretive display on the Cactus Flat Revegetation project. This display was used at the Regional Botany Meetings, the Big Bear Chamber of Commerce Visitor Center for 1 month, the Supervisor's Office reception area for 2 months and at several Earth Day events.

Developed displays on wildflowers and volunteer activities to be rotated through the Big Bear Chamber of Commerce Visitor Center. These displays will also be used at other locations.

Interpretation, Education and Networking, Internal:

Organized and assisted in conducting training for 14 District resource seasonals. This included compiling information on District resources, ethics and conduct and safety as well as developing the agenda and planning the field trip.

Participated in field trip for Regional Forester Ron Stewart. Positive solutions to many of our resource issues including revegetation of illegal roads with native plants at Cactus Flat were highlighted. The Fish and Wildlife Service proposal to list 5 plant species on the Big Bear Ranger District was also discussed.

Participated in field trip for Associate Chief George Leonard. The complexity of issues on the Forest including conflicts between TES plants and recreation, mining and special uses were discussed.

Facilitated a 1/2 day session on monitoring and Species Management Guides at the Regional Botany Meetings in Sacramento.

Karen Danielsen, Forest Botanist on the Los Padres National Forest visited to discuss program development and monitoring.

Expand Knowledge of Sensitive Plants and their Habitats:

The Forest set up a Challenge Cost Share Agreement with Bruce Baldwin, Ph.D. of Duke University (formerly of The University of Arizona) to study the genetic differences between *Layia ziegleri*, a locally endemic sensitive species, and *Layia platyglossa*, a common species. This project will be completed in FY 93.

We continued to work on a study of Geographic Variation in Munz's Hedgehog Cactus begun in FY 90. This year allozyme data were collected from 156 individuals from nine populations. All morphological data have been collected and analysis is in progress. Electrophoresis was conducted in Dr. Norm Ellstrand's Laboratory at UC Riverside.

Revisited a population of *Galium californicum* ssp. *primum* on the San Jacinto Ranger District that had not been checked since 1981. Specimens were verified by Lauramay Dempster of the Jepson Herbarium.

Volunteer Dane Winkleman searched approximately 22 miles of streams in the San Gorgonio Wilderness to map populations of *Lilium parryi*.

Volunteer Dirk Rodriguez inventoried and mapped areas containing *Horkelia wilderae* beyond those areas covered in a 1981 botanical investigation. He also assisted with sensitive plant surveys of project areas.

Volunteer and artist Julie Schneider assisted with monitoring *Echinocereus engelmannii* var. *munzii*. Julie is completing a series of watercolors on TES plant species in California. ECENM is one of her chosen species.

Relocated *Lilium parryi* at a historic location on the Cajon Ranger District. The district implemented a seasonal closure of roads accessing the area to protect a significant wildlife area in 1991.

Updated sensitive plant location information within the Holcomb Valley/North Baldwin Lake Special Interest Area. Locations for 26 TES plant species and several CNPS watch plant species were mapped from air photos onto topographic maps. This mapping was done in conjunction with larger scale mapping being completed by the Natural Diversity Database.

Provided voucher specimens of many native plant species to Tim Krantz for the Flora of the San Bernardino Mountains. We also reviewed the draft of this publication for accuracy.

We completed sampling for an administrative study on habitat characteristics of the Federally and State Endangered *Thelypodium stenopetalum*. A total of 125 plant centered and 125 random plots were sampled at 4 locations. Data analysis will be completed this fall and the report will be submitted in January, 1993. Appropriated Forest Service funding was used to complete the sampling; California Environmental License Plate funding from CDFG will be used for data analysis and writing.

Graduate Student Activities

Diane Elam (UC Riverside) is researching Genetic and Phenotypic Variation in *Lilium parryi* and *Lilium humboldtii* in the San Bernardino, San Gabriel and San Jacinto Mountains. She is comparing variation among the two species as well as within each species in populations of varying size. We assisted Diane with transportation, access to restricted areas and with small amounts of assistance with field work.

Mike Gonella (San Jose State University) is studying vegetation growing on carbonate substrates in the San Bernardino Mountains. He is comparing sites occupied by four of the five species endemic to carbonate substrates with randomly selected sites. These data will be used to assess cumulative impacts of vegetation loss as well as to develop revegetation standards. Mike completed his 1992 field work as an employee. He will return this fiscal year to finish sampling and data analysis.

Linda Allen of Cal Poly San Luis Obispo is studying the genus *Monardella*. We accompanied her to verify a population of *Monardella macrantha* ssp. *hallii* in the Cahuilla Mountain RNA.

Bill Straits (California State University, Fullerton) is comparing isozyme variation within and among 8 sub-populations and two populations of *Lesquerella kingii* ssp. *bernardina*.

Edna Rey is studying aspects of *Taraxacum californicum* to develop a conservation strategy for this taxon.

Training:

Botanists attended training sessions in statistics for resource managers, biological evaluation preparation, high altitude revegetation, restoration, and TES plant monitoring.

Other:

Assisted South Zone Ecologists in sampling Coastal Sage and Alluvial Fan Sage Scrub vegetation types on the Forest.

Served on a selection panel for the Los Padres National Forest's Forest Botanist position.

Assisted Mary Burke with an ecological survey for the Broom Flat Research Natural Area, as well as providing her with information for the reports for three candidate Research Natural Areas.

The Forest Botanist continued to serve as the Forest RNA coordinator.

Assisted other botanists in the region with developing a draft biological evaluation format.

SEQUOIA NF **********

1. Describe the botanical expertise and workforce on your forest

The forest has 1 full-time botanist Linda Tanner and 7 temporary botanical technicians. In addition, 5 wildlife biologists and 1 range conservationist also assist the plant program.

2. Amount and/or types of projects/acres surveyed for and numbers of biological evaluations written for sensitive plants in FY 92

There was a total of 18 projects that had some form of plant input ranging from recreation loop trails to timber sale support. Plant input was included in 12 BE's (at least 1 BE was dedicated solely to plants).

3. Describe your forest accomplishments in sensitive plant management in FY 92. (Include such items as species management guide development, challenge cost-shares, wildflower week celebrations etc.)

There were no management guides completed this year, however, the foundations for work on two species were started. Results from the Shirley Meadows Mariposa Lily research will enable the Forest to finish that plan. Work on the Kern River Daisy guide will be initiated through KV project funding.

The demographic study of *Calochortus westonii* through a five-year Challenge Cost Share Agreement with San Francisco State University is continuing into its second year. The Forest Resource Officer and Hot Springs District Botanist met with graduate student Barbara Knapp, who collected field data at population locations on the Hot Springs and Greenhorn Ranger Districts. Results from the study will be used for revision of the *Calochortus westonii* Species Management Guide. *C. westonii* populations flagged and mapped during the 1991 surveys were monitored and re-flagged where necessary to continue protection from logging, fuels treatment and planting activities.

4. $$ spent on TES plant program during FY 92 by the following funding sources

Appropriated funds (all Forest Service sources & cost-share)	$ *64,700*
Contributed funds & cost-share from non-Forest Service sources	$ *6,000*
Knutson-Vandenberg funds	$ *-0-*
Total Forest Plant Program	$ *70,700*

5. Name of sensitive plant(s) and number of new occurrences discovered in FY 92

Sensitive Species	*New Occurrences*
Calochortus westonii	30
Eriogonum twisselmannii	2
Oreonana purpurascens	2
Eriogonum breedlovei var. *breedlovei*	3
Delphinium inopinum	14

Erigeron multiceps	12+
Horkelia tularensis	1

6. Other Forest plant program highlights

Provided support/permits and limited logistical support for a study on a 3 year study by Tom Englehart of Cal State Northridge on pollenation ecology of the Flat Leafed Bladderwort (*Utricularia intermedia*) in the Big Meadows area.

Provided seeding prescriptions and technical advice on fill slope stabilization using native plants for two district projects (trailhead construction).

Collected about 1 gram of *Erythronium pusaterii* seed from Jordan Peak for a European botanist.

Provided information on a management plan for *Clarkia springvillensis*.

Took pictures for a spring wildflower display.

IDT planning and preliminary field work for ecosystem management in the South Creek Basin Integrated Resource Project area was started. A two-person crew funded by the Regional Office through the Neotropical Migratory Bird Habitat Program conducted meadow inventories for multiple resource monitoring purposes in the project area. More directly related botany work, e.g., an interpretive trail, is scheduled for next year.

Sensitive Plant Program t-shirts were created and sold through the Hot Springs Ranger District.

An intensive survey for sensitive plant species was conducted on the Piute Mountains of the Greenhorn RD, Sequoia NF. Three sensitive plant species were surveyed for: the Piute jewel flower (*Streptanthus cordatus* var. *piutensis*); the Piute buckwheat (*Eriogonum breedlovei* var. *breedlovei*); and unexpected larkspur (*Delphinium inopinum*). Total area amounted to approximately 6870 acres consisting of the following breakdown:

Area of known populations	200 acres
Area of newly found populations	70 acres
Area surveyed with no new populations found	*6600* acres

Three new occurrences (over 950 plants) of the Piute buckwheat, (*Eriogonum breedlovei* var. *breedlovei*) were discovered. Fourteen new occurrences (over 3400 plants) of the unexpected larkspur, (*Delphinium inopinum*) were discovered, some were located significantly east of previously known populations.

All populations were mapped, documented and flagged to be avoided and protected from timber management activities.

Other related sensitive plant activities included taking numerous photographs of other plant species in the Piute Mountains in an effort to compile a pocket herbarium for the district. A pocket herbarium would be a useful tool for future field surveys and can serve as an excellent reference for quick plant identifications as well as providing a permanent visual record of species occurring on the district.

A Biological Evaluation was completed for the Fish Timber Sale. Two monitoring reports were written for the Jack Timber Sale and Sirretta Loop Trail.

The Cannell Meadow District updated the District herbarium and put together a photo guide for Bald Mountain Botanical area.

Established photo points for Kern River Daisy in the Jack Timber Sale, designed and implemented an educational program for Kern River Daisy. The program included signs, brochures and talks in order to educate users to mitigate effects of recreational activities on Kern River Daisy populations.

Collected Kern River Daisy seed for future use and collected rose seed for air quality work.

SHASTA-TRINITY NF **********

1. Describe the botanical expertise and workforce on your forest

The botanical program for the Shasta-Trinity is administered as a specialist service offered by the supervisor's office to the seven Districts. Currently all botanical expertise on the Forest resides in the S.O., with coordination duties assigned to the Districts (i.e. providing maps and project documents to S.O. botany staff to get project work done).

Botany program staff from 1989 to the present has consisted of one PFT Forest Botanist, Julie Nelson (B.S. Botany, M.S. Biology), and one or two temporary or NTE assistants during the field season to handle part of the field survey workload. This year two NTE botanists were hired: Vivian Long and Sue Pappalardo. Both women have bachelor's degrees in botany.

The last few years have seen a gradual increase in project BE workload caused by the proliferation of small projects that now require botanical documentation. In addition botany program has expanded into non-traditional areas such as interpretation, botanical forest products, and watershed restoration to meet biodiversity goals. A centralized program no longer is able to meet the Districts' needs. TES plant and other botanical expertise is needed at the ground level in order to provide meaningful botanical participation in ecosystem management.

The Shasta-Trinity has decided to shift project level botanical responsibility away from the S.O. to the Districts, and retain S.O. botany staff in an advisory and training capacity. This change requires the development of botanical expertise on the Districts. Hiring of botanists at the District level is unlikely because of the current trend toward shrinking District staffing levels to adjust to budget cuts; therefore botanical expertise must be developed in existing staff from other disciplines. Training sessions were held for four districts in FY 92; additional training will be held in FY 93. We also have plans to develop a self-training slide program for loan to the Districts.

Starting in FY 94, the Districts will assume responsibility for project level surveys and BEs. FY 93 will be a transition and training year, with S.O. and District staff participating jointly in project work.

2. Amount and/or types of projects/acres surveyed for and numbers of biological evaluations written for sensitive plants in FY 92

Green sales (5 BEs)
Salvage sales (4 BEs)
Recreation projects (5 BEs)
Land exchange (1 BE)
Road construction, rock pits (2 BEs)
Special uses (3 BEs)
California-Oregon Transmission Project (2 BEs)

3. Describe your forest accomplishments in sensitive plant management in FY 92. (Include such items as species management guide development, challenge cost-shares, wildflower week celebrations etc.)

Challenge Cost-Share

One CC-S project was carried out, a habitat assessment and survey of *Madia stebbinsii*, a serpentine endemic of the Trinity and Mendocino NFs. The project was funded jointly by the Shasta-Trinity and Mendocino Forests, with cooperator Niall McCarten doing the work. The results will be used to begin development of a species management guide.

Species Management Guides

No new species management guides were developed to signature stage this year. However, work continues on several botanical investigations that will lead to SMGs:

A second year's data was gathered from study plots in the *Phacelia dalesiana* disturbance study. Prescribed burns were implemented for the second group of plots that we had been unable to burn last year because of the dangerous late fire season. At this point all experimental treatments have been implemented, and all that remains is to read and analyze plot data in subsequent years.

Preliminary work was started to correlate the distribution of *Linanthus nuttallii* ssp. *howellii* to geological and soil factors. Tedoc linanthus is endemic to ultramafic soils in a 5 mile square corridor of Trinity N.F. A joint field trip with Forest Geologist Don Haskins and Zone Soil Scientist Scott Miles was followed by analysis of soil samples collected from occupied linanthus sites and adjacent non-occupied sites.

A second year's data was collected from permanent monitoring transects for pallid bird's beak (*Cordylanthus tenuis* ssp. *pallescens*). Sierra Pacific Industries voluntarily incorporated protection of this plant into their timber harvest activity on an adjacent SPI-owned parcel.

Training

TES plant program training sessions were held on the Big Bar, Weaverville, McCloud, and Hayfork Districts. Training topics included the legal and regulatory basis for the existence of the sensitive plant program, step by step procedures for project level habitat assessments, surveys, and BEs; and how to recognize sensitive plants and their habitats. New field ID books were provided. A preliminary habitat assessment form is being developed for each District.

Vivian and Sue spent several days in the field with wilderness rangers on the Weaverville and Mt. Shasta Districts teaching plant ID. Special field ID books were developed for Trinity Alps wilderness rangers.

Interagency cooperation

Forest Botanist Julie Nelson contributed detailed sensitive species information to the U.S. Fish & Wildlife Service for use in updating the USFWS Notice of Review for listed and candidate plants; and to the California Native Plant Society for revision of the CNPS Inventory. Population reports for new and revisited sensitive plant occurrences were sent, as usual, to the California Natural Diversity Data Base.

A joint field trip with Joe Molter of the Redding office of BLM was taken to find a population of Canyon Creek stonecrop (*Sedum obtusatum* ssp. *paradisum*) on BLM land on Shirttail Peak west of Redding. This population had been reported by Jim Jokerst many years earlier. After minor road repair by the field team, and a little photo and map interpretation, we were able to find and photograph the sedum population and update the population report.

Joe Molter of BLM and Sue Pappalardo of the Shasta-Trinity responded to Jim Shevock's request for information and material of the newly discovered shrub *Neviusia cliftonii* for use in preparing the manuscript and illustration for the species. Joe and Sue visited the type locality, collected specimens and took photos, and came home with cases of poison-oak!

Public Education and Other Presentations

Julie Nelson presented botanical programs to the Shasta chapter of CNPS and to We Ski II, a local recreation group; also a program on rare plants and vernal pools to the first grade classes of Project City Elementary School.

Vivian Long spent two days working with students of the McCloud Elementary School, providing interpretive programs at Trout Creek on plant conservation, meadow ecology, and edible and useful plants. The school is participating in an Adopt-A-Watershed program at Trout Creek, with the McCloud Ranger District.

Forest Botanist put together a poster display of four botanical investigation projects on the Shasta-Trinity, which was shown at the Biodiversity of Northwestern California conference in Santa Rosa, and at several other meetings.

Forest Botanist presented a slide show on how to set management objectives for sensitive plants, at the Region Six botanists' meeting in Spokane, Washington.

Herbarium Development

Approximately three hundred specimens were collected for accession into the Shasta-Trinity herbarium and for distribution to other herbaria. The herbarium has proved very useful in training and reference. Duplicate specimens of sensitive species were donated to Region 1 of the California Dept. of Fish & Game to start their reference collection of rare plants. Specimens were also provided to the Jepson Herbarium, Chico State University, and other academic herbaria.

4. $$ spent on TES plant program during FY 92 by the following funding sources

Appropriated funds (all Forest Service sources & cost-share)	$ 67,000
Contributed funds & cost-share from non-Forest Service sources	$ 3,500
Knutson-Vandenberg funds	$ 5,000
Total Forest Plant Program	$ 75,500

5. Name of sensitive plant(s) and number of new occurrences discovered in FY 92

Arctostaphylos klamathensis	1
Epilobium siskiyouense	2
Erythronium citrinum var. *roderickii*	3
Linanthus nuttallii ssp. *howellii*	2
Madia doris-nilesiae	2
Penstemon tracyi	1
Sedum laxum ssp. *flavidum*	5

6. Other Forest plant program highlights

Forest Botanist Julie Nelson enjoyed serving as assistant editor for R5 Bot. News, the Region 5 botanical newsletter started in FY 92.

The NBOT meetings, held quarterly in Redding, have been a great forum for exchanging information and ideas among the northern Forest Botanists. BLM specialists Joe Molter and Gary Schoolcraft have also participated regularly.

Shasta-Trinity botany staff provided more than 150 hours of plant ID in support of Ecological Unit Inventory projects on the McCloud and Hayfork Districts.

Forest Botanist provided expert testimony at several Shasta County court proceedings, using the vegetation at an archaeological site to estimate the date when illegal digging of artifacts occurred.

Forest Botanist assisted Yolla Bolla and Hayfork Ranger District staff in administering beargrass collection permits, and provided information to law enforcement following beargrass theft.

SIERRA NF **********

1. Describe the botanical expertise and workforce on your forest

The Sierra has one permanent, full time Forest Botanist, Joanna Clines. Four temporary botanists were hired during FY 92: Scott Wilson worked approximately 3 months conducting botanical surveys and writing BEs, Eric Liskey worked 3 months, primarily gathering data on the effects of disturbance on *Collomia rawsoniana*, Jim Bouldin worked intermittently throughout the year growing seeds of *Clarkia lingulata* and surveying potential sites for introduction of a third population, and Susan Moore worked intermittently processing the results of a breeding system study on *Carpenteria californica*.

Lynn Thurston volunteered approximately one week of time (worth $500.00) assisting the Botanist with preparing for and conducting Sensitive Plant Training Sessions on each District. Eric Liskey volunteered his time completing the task of gathering and processing data on *Collomia rawsoniana* (see cost-share section).

2. Amount and/or types of projects/acres surveyed for and numbers of biological evaluations written for sensitive plants in FY 92

TYPE OF PROJECT	*ACRES SURVEYED*
13 timber sales	25,000 acres
3 miles trail	210 acres
10 miles of road reconstruction	700 acres
3 Special Use Permits	100 acres
Herbicide treatment units	*100 acres*
Total: 18 projects with BEs	26,110 acres

Sensitive plant input was provided for a total of 32 projects, mostly in the form of Biological Evaluations.

This year proportionately more time was spent working with marking crews and sale administrators on active salvage sales to ensure protection of sensitive plant populations and habitat.

3. Describe your forest accomplishments in sensitive plant management in FY 92. (Include such items as species management guide development, challenge cost-shares, wildflower week celebrations etc.)

SENSITIVE PLANT TRAINING FOR DISTRICT PERSONNEL

The Forest Botanist conducted one-day workshops on each of the 4 districts during the blooming season. The purpose of the sessions was to increase understanding and awareness among district personnel regarding sensitive plants along with other aspects of the botany program on the Forest. Each session included a morning presentation giving an overview of the sensitive plant program including TES terminology, FS direction regarding sensitive plants, plant survey and project input guidelines, and a demonstration of the tools available at the district level (atlas, map display, binders, etc.). This was followed by a slide presentation illustrating sensitive plants and their habitats for each district, and the afternoon was spent in the field, viewing as many species in bloom as possible. Each session was attended by 25-30 people, and the response was very positive, resulting in several new occurrences located by district personnel.

BOTANY PROGRAM PRESENTATIONS AT DISTRICT FAMILY MEETINGS

The Botanist gave slide presentations at two of the four districts during family meetings attended by the entire ditrict staff. Emphasis was on sensitive plants with a heavy dose of Ecosystem Management. The important role botanists play in fire rehab, revegetation and restoration, and project input was stressed.

STUDY OF THE EFFECTS OF DISTURBANCE ON RAWSON'S FLAMING TRUMPET

The study of effects of disturbance on the sensitive plant Rawson's flaming trumpet, *Collomia rawsoniana*, continued with the help of $1,200 in time contributed by California State University, Fresno Master's student Eric Liskey. In summer and fall 1991, plots were established for the purpose of evaluating the effects of logging, cattle grazing, and fire on flaming trumpet colonies. Eric gathered exhaustive data on soil moisture, light levels, canopy cover, species composition, and features of reproductive success for flaming trumpet. Data gathering was repeated during July and August 1992 to evaluate the effects of the treatments, and to begin long-term monitoring for the species. The Forest Service paid Eric for the bulk of the field work, and he has been processing and analyzing data on his own time, as well as taking and labeling photographs at 4 photo points per plot. Preliminary results indicate that cattle grazing has a significant negative effect on flaming trumpet colonies.

MARIPOSA PUSSYPAWS - STATUS SURVEY AND CATTLE EXCLOSURE

All seven occurrences of the Mariposa annual pussypaws, *Cistanthe pulchellum*, were visited during the blooming season by the Forest Botanist, Lynn Lozier of the Nature Conservancy, and Ann Mendershausen of Mariposa. An additional occurrence was discovered, bringing the total to eight. Only one population of this very rare annual is found on National Forest lands, all others are on privately owned land vulnerable to various degrees. The Sierra NF population consisted of 770 individuals in 1992 (compared to 58 in 1991!), and this is the largest population, most had fewer than 500 plants (not many for an annual!). The Sierra NF population is in the middle of a type-conversion from chaparral to rangeland, and as it was experiencing some cattle trampling, the Pineridge Ranger District fenced the population and surrounding appropriate habitat in May. The next task is to coordinate with other agencies to ensure long-term viability for this rare taxon. Knowledge of ecological and demographic factors is scanty and sorely needed.

SPECIES MANAGEMENT GUIDES

Scott Wilson began writing an Interim Species Management Guide (SMG) for *Lupinus citrinus* after conducting a partial Botanical Investigation in the Jose Basin watershed. Scott visited and evaluated 20 occurrences and found 1 new occurrence.

Draft Species Management Guides for *Carpenteria californica* and *Clarkia biloba* ssp. *australis* have been written, but need to be finalized.

PRERECOVERY OF MERCED CLARKIA

Work associated with introducing a third population of Merced clarkia, *Clarkia lingulata*, continued. Most of the work was funded by pre-recovery dollars transferred to the Forest Service by the US Fish and Wildlife Service in 1991, and carried out by Jim Bouldin of UC Davis. Accomplishments in FY 92 include the production of large numbers of seeds at UC Davis to sow in fall of 1993, and the selection of a suitable introduction site. Field work in appropriate habitat for this very rare annual is inhibited by the extremely steep and poison oak-clad terrain. Current work involves designing the introduction to best learn which factors account for success or failure, and writing a NEPA document.

STUDY OF REPRODUCTIVE BIOLOGY OF TREE ANEMONE

Work continued on determining the breeding system of tree anemone, *Carpenteria californica*. Survivorship of seedlings that germinated after the 1989 Powerhouse Fire continued to be monitored. These were the first seedlings ever discovered in nature, revealing a long-suspected requirement for fire in order for the species to sexually reproduce. Of 400 seedlings tagged in 1990, about 10% survived past the summer of 1992. Communication with PSW about this species has brought about the prospect of PSW funded research into the question of which factors associated with burning actually allow seedling establishment. In addition,

PSW in Albany is performing allozyme analysis this fall on leaves collected from three disjunct populations with the hope of better understanding the distribution of genetic variablility in this relict species.

MULTIAGENCY MEMO OF UNDERSTANDING FOR MERCED RIVER CANYON

The MOU with Pacific Gas & Electric Company, Caltrans, California Department of Fish and Game, Bureau of Land Management, and the Forest Service will provide protection for 5 species of sensitive plants, including the State-endangered *Clarkia lingulata*. All work is complete on the document after many, many field, office and telephone meetings to resolve various details, especially those related to highway maintenance versus sensitive plant protection.

4. $$ spent on TES plant program during FY 92 by the following funding sources

Appropriated funds (all Forest Service sources & cost-share)	*$49,302*
Contributed funds & cost-share from non-Forest Service sources	*$ 5,700*
Knutson-Vandenberg funds	*$ -0-*
Total Forest Plant Program	*$55,002*

5. Name of sensitive plant(s) and number of new occurrences discovered in FY 92

SPECIES	*# NEW OCCURRENCES*
Camissonia sierrae ssp. *alticola*	3
Collomia rawsoniana	3
Eriogonum prattenianum var. *avium*	3
Ivesia unguiculata	5
Lupinus citrinus	1
Trifolium bolanderi	1
TOTAL # NEW OCCURRENCES	16

6. Other Forest plant program highlights

NATIVE AMERICAN ISSUES

The Forest Botanist conducted two field trips with various elders of the Mono Indian Tribe in order to learn traditional uses of various plants, help with protection of sensitive gathering areas, and build a relationship that facilitates information exchange.

BARIUM MINE REHABILITATION

Because of the presence of three species of sensitive plants at the abandoned El Portal Barite Mine, the Forest Botanist recommended against the use of commercial seed mixes to revegetate the spoil pile after rehabilitation to correct toxic leaching was completed. Mulching of the reshaped spoil pile was done with native litter taken from the surrounding area. This resulted in a substantial cover of pine needles and manzanita leaves on the slopes, which provided the primary function of intercepting precipitation and reducing loss of soil to erosion, and the secondary function of germinating a flush of native annuals. Plantings of site-specific manzanita, redbud and oak were also carried out, but only the oaks were successful, with 12% living through the summer.

RESEARCH NATURAL AREAS

The process of writing a Management Plan for the Backbone Creek RNA was begun. A 5,000 acre blue oak RNA site was selected and will be nominated soon. This was greatly facilitated by members of the RNA Committee from the Regional Office, who spent time on the Forest visiting potential sites with the Botanist. The Regional Office transferred $1,000 to the Sierra to be used for these projects.

BOTNEWS

The Forest Botanist, along with the Shasta-Trinity NF Botanist, edited the first two issues of a newsletter for Region 5 botany personnel. The newsletter provides an opportunity for the Botanists to exchange current information and keep abreast of the activities of our counterparts in other agencies. Featured are articles about Botany program development, including non-TES issues, book reviews, calendar of events, reviews of events attended, and many other pertinent topics.

SIX RIVERS NF **********

1. Describe the botanical expertise and workforce on your forest

Six Rivers supports one botanist to manage the program on a 960,000 acre Forest with 4 Ranger Districts. Technical and administrative support is also drawn from the Zone Ecologist. In FY 92, an intermittent botanist was hired to write a species management guide for *Bensoniella oregana* (BEOR). The employee also helped design and carry out the annual monitoring for this species. A work-study student was hired to assist in organizing, filing and compiling information on sensitive plant species.

The Forest also used volunteers to accomplish sensitive plant projects. Volunteer time totalled 68 hours which is equivalent to approximately $700.00 cost to government. Members of the California Native Plant Society contributed to the program in the following ways: a) assisted in the identification of habitat protection projects in the Lassics Botanical Area, b) provided technical support for development of management prescriptions for the botanical areas, c) participated in a 2-day field trip with Forest staff to discuss recreation options in the North Fork Smith Botanical Area, and d) assisted with the installation of a fence to protect BEOR from cattle trampling.

2. Amount and/or types of projects/acres surveyed for and numbers of biological evaluations written for sensitive plants in FY 92

The intensity of timber sale, small sale, land exchange and project surveys was related to the potential habitat in the area and information about existing sensitive plant populations. The following chart displays the acres evaluated including office (database queries, airphoto review) review and the acres actually field surveyed.

	Acres Evaluated	Acres Surveyed
Timber Sales (6)	12867 acres	1300 acres
Small Sales (4)	10 acres	0 acres
Land Exch. (2)	8 acres	0 acres
Projects (4)	3000 acres	10 acres
Monitoring		10 acres
TOTAL	15885 acres	1320 acres

Five BE's were written as a result of the aforementioned surveys.

3. Describe your forest accomplishments in sensitive plant management in FY 92. (Include such items as species management guide development, challenge cost-shares, wildflower week celebrations etc.)

FY 92 accomplishments were highly diversified from development of a species management guide to putting a road to bed in a botanical area. An area of the program which received special attention included species monitoring and marketing of the botany program. The latter was accomplished through displays, brochure development, slide presentations and enhancing communication internally as well as with our cooperators.

The program specifically accomplished the following in the realm of sensitive plant management:

* Developed a Draft Species Management Guide for *Bensoniella oregana*. The document is now under review and is planned for completion by December of this year.

* Entered into a cost-share agreement with **The Garden Club of America** to fund the production of a brochure featuring the botanical areas of the Six Rivers. This project was one of only a few such projects funded nation-wide by the Club. The intent of the brochure was to heighten the public's awareness of the areas' values. It is hoped that the brochure will help foster support internally and externally for these areas.

* Closed a road in the Lassics Botanical Area with funds awarded by the Green Sticker Fund Program administered by the California Department of Parks and Recreation. The monies were used to restore a trail accessing sensitive plant habitat within the Lassics Botanical Area. Given the open terrain, off-highway vehicles travelling off the trail have negatively impacted wetland habitats and potential habitat for sensitive plants. The funds were also used to acquire interpretive signing--signs explaining why the trail was closed, as well as site information signs identifying the boundaries of the botanical area in hopes of detering resource damage through education.

* In coordination with the Information Systems Management Branch, a Sensitive plant database is being developed in ORACLE. The database entitled ARABIS (for Automated Resource and Botanical Information System) is a protocol for a USFS, Region 5 database that would standardize sensitive plant data, promote communication between Forests and other agences and provide a link to GIS applications. The database was also designed to be compatible with the California Natural Diversity Database (CNDDB) which will facilitate sharing information between CNDDB and Region 5 Forests.

Development proposals for ARABIS and CNDDB access were submitted to the Regional Office in February and August respectively. To date, Steve Matthews of our ISM staff has developed an upfront, menu-driven formate to facilitate query access to the CNDDB. The next phase of the database development will be finalizing data tables (ensuring data standards are met) and the creation of forms for Forest data entry. The Eldorado, Mendocino and Six Rivers will serve as pilot Forests for initial operations of ARABIS.

Work on ARABIS has stimulated interest and inquiries from around the nation. Pending final Regional approval, ARABIS will be distributed to the pilot Forests to work out some of the "kinks" in the system.

* With the assistance of CNPS volunteers, the only site of *Bensoniella oregana* under federal jurisdiction in California, was fenced to prevent trampling by cattle.

* Wrote an article for an internal newsletter entitled "Sounds of Six Rivers" regarding the fencing of the state-listed rare *Bensoniella oregana*.

* Designed 4 displays for exhibit on the Districts as a part of National Wildflower Week. The displays highlighted the botanical areas on the respective Districts as well as rare plant species.

* Conducted a sensitive plant training on the Districts to enhance the District's appreciation of the program and to enhance awareness about the sensitive plants on our Forest, highlighting key diagnostic characteristics and habitats.

* Presented a slide program to the Management Team emphasizing the diversity of the program, the accomplishments, the goals and opportunities for the future.

4. $$ spent on TES plant program during FY 92 by the following funding sources

Appropriated funds (all Forest Service sources & cost-share)	*$30,050*
Contributed funds & cost-share from non-Forest Service sources	*$ 7,730*
Knutson-Vandenberg funds	*$10,000*
Total Forest Plant Program	*$47,780*

5. Name of sensitive plant(s) and number of new occurrences discovered in FY 92

Sanicula tracyi	9
Dicentra formosa ssp. *oregona*	1

6. Other Forest plant program highlights

INTRA-AGENCY AND INTERAGENCY RELATIONS

Participated in quarterly meetings of the northern botanists to discuss issues related to respective botany programs but also issues/concerns shared by all. As an active participant, an article on ARABIS was submitted for publication in the Region 5 newsletter.

Participated as a member of a Bioregional Planning Group which meets regularly to discuss issues related to biodiversity in the Northcoast. The primary goal of this bioregional group is information sharing and promoting active measures towards reaching the goal of creating a framework for bioregional planning and protecting the biodiversity of the north coast and Klamath provinces.

Participated in Region 5's Annual Botany Meeting as a facilitator for the sections dealing with Special Interest Areas and the application of the Clean Water Act's Section 404 process.

As a detailer to the Washington Office, assisted in compiling information for production of the Gordzilla Report for the Fish and Wildlife Service. Responsibilities consisted of information oversight, quality control and data entry.

Initiated the development and coordinated the logistics of a 30 hr course entitled "Sampling Design" for biologists on Six Rivers.

Selected to attend the Continuing Education Course entitled "Biological Monitoring".

EXTERNAL RELATIONS

Co-authored a paper with Tom Jimerson, Zone Ecologist, entitled "Old-growth Forest Fragmentation: Changes in Amount, Patch Size and Edge as a Result of Logging." Paper was presented at the Biodiversity of Northwest California and will be published in the proceedings for the conference. In conjunction with the writing of this paper, developed a poster for presentation at the Landscape Ecology Conference in Corvallis, Oregon.

Met with representatives of CNPS to discuss their concerns about a proposed Off-Highway Vehicle (OHV) Plan which would allow for OHVs in the North Fork of the Smith Botanical Area--an area which supports numerous sensitive and rare plants (including the federally listed MacDonald's rock-cress), and Port-orford cedar along creeks which are still uncontaminated by the lethal root disease.

DISTRICT AND SUPERVISOR'S OFFICE SUPPORT AND RELATIONS

Supported the LMP staff by drafting outlines for the management of Botanical Areas.

Participated as an ID team member on 3 EISs and wrote the supporting material for the documents in accordance with the NEPA process including issue statements, mitigations, affected environment and environmental consequences.

Coordinated field trips for District Rangers, resource specialists, the Recreation Staff Officer and the Deputy Forest Supervisor to discuss and outline management prescriptions for two of the botanical areas on

the Forest. Boundaries, opportunities and appropriate type/level of use were discussed. Information was incorporated into prescriptions to be included in the LMP under Special Interest Areas.

STANISLAUS NF **********

1. Describe the botanical expertise and workforce on your forest

The Stanislaus NF botanical expertise consists of 1 district botanist, 2 biologist/botanists, and two botanists/ecologists in the ecology program. Six temporary botanists were hired in FY 92 and an additional 14 biological technicians with various amounts of botanical experience were used on the four districts.

Three volunteers with botanical education/expertise were also utilized in FY 92.

2. Amount and/or types of projects/acres surveyed for and numbers of biological evaluations written for sensitive plants in FY 92

Groveland RD			
Insect Salvage	72 packages*	6058 acres	13 BEs
Green Sale	2 projects	875 acres	2 BEs
Site Prep/Planting	3 projects	3573 acres	3 BEs
Plantation Release	2 projects	2532 acres	1 BE
Fuels Reduction	4 projects	1182 acres	1 BE
SIA Management Plan			1 BE
Admin Site Improve.	1 project	27 acres	1 BE
Wildlife Improve.	1 project	10 acres	no BE
Totals	85 projects	14,257 acres	22 BEs

*"packages" refer to each insect salvage addon volume package plus new insect salvage sales.

Summit RD			
range allotments	2 projects	700 acres	2 BEs
Calaveras RD			
timber, recreation			
soils, watershed	46 projects	5,540 acres	46 BEs
Mi-Wok RD			
timber sales			
plantation release	3 projects	260 acres	2 BEs
TOTALS	136 projects	20,757 acres	72 BEs

3. Describe your forest accomplishments in sensitive plant management in FY 92. (Include such items as species management guide development, challenge cost-shares, wildflower week celebrations etc.)

The district botany programs primarily emphasized surveys and BEs for the planning and implementation of projects under other resource programs, such as timber sales, site preparation and planting work and plantation release projects. On Groveland, the implementation phase of work consisted of reflagging populations in or near plantation release projects and monitoring project implementation for adverse impacts to sensitive plant populations.

The Summit RD Interpretive Specialist led two field trips and Calaveras RD used posters and a presentation to a local preschool as part of the celebration of Wildflower Week.

4. $$ spent on TES plant program during FY 92 by the following funding sources

Appropriated funds (all Forest Service sources & cost-share)	*$ 168,350*
Contributed funds & cost-share from non-Forest Service sources	*$ -0-*
Knutson-Vandenberg funds	*$ -0-*
Total Forest Plant Program	*$ 168,370*

5. Name of sensitive plant(s) and number of new occurrences discovered in FY 92

Clarkia australis	48 occurrences
Eriophyllum congdonii	1 occurrence
Mimulus filicaulis	8 occurrences
Silene invisa	4 occurrences
Erythronium tuolumnense	1 occurrence

6. Other Forest plant program highlights

Groveland RD: The Botany Department committed themselves to helping design the landscape for the new District office. Plants native to the district will be featured throughout the landscape. To facilitate this, seeds were collected from the District and grown by the Department. The plants grown this year will be installed in the landscape this fall and more seeds will be sown. Plants will include *Eriophyllum lanatum*, *Aesculus californica*, *Monardella odoratissima*, *Penstemon laetus*, *Quercus douglasii*, and *Heteromeles arbutifolia* as well as others. The landscape was designed with several theme areas: historic landscapes, fire-safe landscapes, silvicultural exhibit and a native american exhibit. Much of the materials for this project were donated by employees. Some of the materials were items confiscated by Law Enforcement.

The Wildlife, Range and Botany Department held a contest to design a department logo again this year. The winning design featured *Mimulus filicaulis*, *Cypripedium montanum*, a great grey owl and a range fence protecting these valuable resources. The design was printed on t-shirts.

Calaveras RD: The Botany Department made a presentation to the CNPS monthly chapter meeting and provided a write-up of local plant ecology for a local school summer recreation program. They also developed a plant atlas for tracking project survey results, collected voucher specimens for the District herbarium, constructed seed beds for a greenhouse project, and planted aspen saplings at a campground as part of a watershed improvement project as well as on property obtained for wildlife mitigation of a hydroelectric project.

TAHOE NF **********

1. Describe the botanical expertise and workforce on your forest.

The Tahoe has a permanent full-time Forest botanist, Kathy Van Zuuk. The Forest also has a sensitive plant coordinator - Don Behrens. Each District Ranger assigns a sensitive plant coordinator who serves as a link between the district and the Forest botanist. The district senstive plant coordinators are: Downieville RD - Heather Newell, Nv. City RD - Gary Cline, Foresthill RD - Matt Triggs, Truckee RD - Keith Mickelson, and Sierraville RD - Patti Buettner.

Seasonal botanical expertise in 1992 included: Ethan Freid - Foresthill District Botanist; Blaze Baker - Downieville District Botanist, Jim Bouldin - Sierraville District Botanist and Donavon Bailey - Assistant Forest Botanist. The Assistant position is a NTE; the District positions were seasonal - about 3-4 months.

Other employees were also trained in sensitive plant identification and assisted in plant surveys.

The Tahoe received over 4 months of volunteer botanical help this year. Dick Hanes and Duncan Berry both volunteered many hours to do botanical surveys and photography. The Yuba Watershed Institute also volunteered 11 people for a day of plant surveying and monitoring.

2. Amount and/or types of projects/acres surveyed for and numbers of biological evaluations written for sensitive plants in FY 92.

The Tahoe National Forest surveyed the following:

TYPE OF PROJECT	NUMBER OF ACRES
Salvage Sales	15,000
Green Timber Sales	22,500
Special Uses	100
Recreation Projects	150
Land Exchanges	50
Wildlife Projects	900
Silvicultural treatments	10,100
TOTAL ACRES	48,800

Over 45 Biological Evaluations were completed and signed. Many more projects were worked on even though the NEPA analysis was not completed.

3. Describe your forest accomplishments in sensitive plant management in FY 92. (Include such items as species management guide development, challenge cost-shares, wildflower week celebrations etc.)

The Tahoe was involved in 2 challenge cost-shares in 1992. The first was entered into in 1991, with CNPS, and involves an ecological study of the sensitive species *Lewisia longipetala*. Anne Halford was selected to do this work and has completed an excellent draft interim management guide for this species. Anne has also volunteered to continue the formal monitoring of this species. This cost-share is between the Lake Tahoe Basin, the Eldorado National Forest, the Tahoe National Forest and CNPS.

The second cost-share is between The Nature Conservancy and the Tahoe National Forest which involves an ecological study of the sensitive species *Eriogonum umbellatum* var. *torreyanum*. Tamara Kan was

selected to do this study. She has already discovered several new occurrences of this sensitive plant and will produce an interim management guide for this species.

The Tahoe, Plumas and Toiyabe National Forests completed an interim management guide for the sensitive species *Ivesia aperta* var. *aperta*, *Ivesia aperta* var. *canina* and *Ivesia sericoleuca*.

The Tahoe celebrated Wildflower Week by developing a beautiful display of the endangered and sensitive species on the Forest, and conducting plant walks for the public and employees. A plant list was generated for one of the Forests recreation trails. The photos were displayed at Big Bend Nature Center all season.

4. $$ spent on TES plant program during FY 92 by the following funding sources

Appropriated funds (all F.S. sources & cost-share)	*$120,000*
Contributed funds & cost-share from non-Forest Service sources	*$ 2,000*
Knutson-Vandenberg funds	*$ -0-*
Total Forest Plant Program	*$122,000*

5. Name of sensitive plant(s) and number of new occurrences discovered in FY 92

NAME OF SENSITIVE PLANT	NUMBER OF NEW OCCURRENCES
Eriogonum umbellatum var. *torreyanum*	9
Fritillaria eastwoodiae	3
Ivesia sericoluca	1
Lewisia cantelowii	5
Phacelia stebbinsii	3
Silene invisa	50+
Vaccinium coccinium	3

6. Other Forest plant program highlights

The botanical staff was active in the Nevada County Environmental Education Program. Hikes were led for local teachers to instruct on plant identification and ecology. A hike was also led for a local boy scout troop. Talks were given to the local chapter of the California Native Plant Society and the Foothill Horticultural Society. The Forest botanist participated in the National Fishing Day celebration by developing and interpreting a plant booth for grade-school children.

The forest botanist was asked to represent botanical resources for the eligibility study for wild and scenic designation of portions of the north fork and middle fork of the American River. This study team was lead by the Bureau of Reclamation and the team was composed of individuals from the U.S. Fish and Wildlife Service, Bureau of Land Management, California State Parks, Tahoe National Forest, Eldorado National Forest and Bureau of Reclamation.

Several watchlist occurrences were discovered.

NAME OF WATCHLIST PLANT	NUMBER OF NEW OCCURRENCES
Taxus brevifolia	25+
Viola tomentosa	1

Drosera rotundifolia	3
Cypripedium fasiculatum	1
Torreya californica	2

The following occurrences of sensitive plants were monitored for vigor, reproduction and threats: 16 occurrences of *Silene invisa*, 2 occurrences of *Lewisia longipetala*, 2 occurrences of *Ivesia sericoleuca*, 2 occurrences of *Ivesia aperta* var. *aperta*, 8 occurrences of *Eriogonum umbellatum* var. *torreyanum*, 5 occurrences of *Lewisia cantelowii*, 3 occurrences of *Phacelia stebbinsii*, and 3 occurrences of *Vaccinium coccinium*. *Fritillaria eastwoodiae* was discovered on the Tahoe National Forest for the first time. Habitat information was obtained from these occurrences.

Parts of several occurrences of *Silene invisa* were fenced to exclude grazing. These occurrences are areas that have been monitored for a number of years for growth and vigor.

The Forest botanist and sensitive plant coordinator are part of the Ecological Interpretation task force for the westside mixed conifer zone to help develop management implications.

The Forest botanist and sensitive plant coordinator are actively involved in the Older Forest Study ID team that is developing alternatives for ways to manage the Forests older forest areas. As part of this study, the Tahoe has identified potential special interest areas (SIA's) and research natural areas (RNA's) that represent gaps in the representation of the various plant communities that occur within our province.

The Forest has initiated several ecosystem management projects. These projects involve botanical and/or ecological concepts to a greater degree than has been done in the past. One example of the ecosystem management approach was to monitor, survey, and map (with a global positioning system) fens in Perazzo meadows of the Sierraville District. This was done as part of the analysis for updating the Perazzo Grazing Allotment Management Plan.

Other examples include approaching project inventory and analysis from an ecological community classification (ecosystem classification) basis. This helps the ID team to develop more accurate existing plant community descriptions as it relates to its potential plant community which provide a better basis for developing the desired future condition.

The Forest botanist is the air quality coordinator for the forest. A Forest Air Working Group (FAWG) has been established which provides representation for the air resource on each district. An ozone monitoring station has been established on the Tahoe. Ozone damage to native vegetation has been monitored for two years.

Locations of sensitive plants were mapped and sent to Pacific Meridian to be put into a geographic information system (GIS) to be used as a planning tool on the Forest.

The Forest botanist actively participated in a timber priority setting workshop. This enabled the Forest to actively plan and prioritize timber harvest projects using known or needed plant information.

The Forest botanist and assistant Forest botanist developed a 5-year plan for the TES and plant programs. This was done in coordination with the Forest wildlife and fisheries biologists.


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